# 54Mbps Wireless LAN
# Pocket Access Point

## USER MANUAL

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# 1. Overview

## 1.1 Product Feature

- ***3-in-1 function build-in*** with easily accessible hot-key switch, including Access Point, Access Point Client and Wireless Router. It's also the ***smallest*** networking device in the market.
- ***Low power consumption*** <less than 460 mA>, and ***support USB power adapter*** which provides the best mobility.
- Compliance with ***IEEE 802.11g*** and ***802.11b*** standards
- Compliance with ***WiFi*** standard
- Achieving data rate up to ***54Mbps*** for 802.11g and ***11Mps*** for 802.11b with wide range coverage
- Strong network security with ***WEP*** encryption, and ***PWA-PSK*** function.
- Quick and easy setup with ***Web-based management utility***.

## 1.2 System Requirements

- Windows 98SE, Millennium Edition (ME), 2000 and XP operating systems
- Microsoft Internet Explorer 5.5 or higher
- At least one RJ-45 Ethernet network adapter installed.

## 1.3 How to switch within 3 modes

- 3 modes are AP, Client and wireless RT.
- Switch to the mode user wants with the hot key, then re-plug the power.
- Few seconds later, the device will reboot automatically to the mode user wants.
- For **AP**, please use **192.168.1.1** as the default IP to configure the settings.
- For **Client**, please use **192.168.1.50** as the default IP to configure the settings.
- For **wireless RT**, please use **192.168.1.1** as the default IP to configure the settings, note that the settings must through the wireless connection, instead of RJ45 cable.

# 2. Getting Start with Access Point

## 2.1 Know the 54Mbps Wireless Network Access Point

**Ports:**

- Power Receptor
- Reset Button
- RJ-45 Ethernet Port
  Cross-over cable is required to connect to computer directly

**LEDs:**

- Power LED: ON when the unit is powered up
- LAN LED: ON indicates LAN connection; BLINK indicates LAN activity
- WLAN LED: ON indicates WLAN is working; BLINK indicates wireless activity.

## 2.2 Connect to the 54Mbps Wireless Network Access Point

Build the Infrastructure Mode

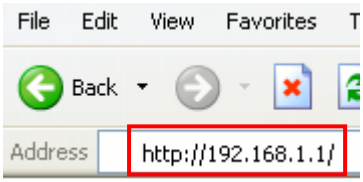
In order to setup an Infrastructure of a wireless network such as the example shown above, user will need the following:

1. A broadband Internet connection.
2. ADSL or Cable modem provided by ISP as part of the broadband connection installation.
3. A Router that connects to the ADSL/Cable modem for Internet connection sharing.
4. An Access Point to connect with the Router to form a wireless infrastructure network.
5. Wireless clients equipped with wireless networking devices such as wireless PC Card for wireless connection.

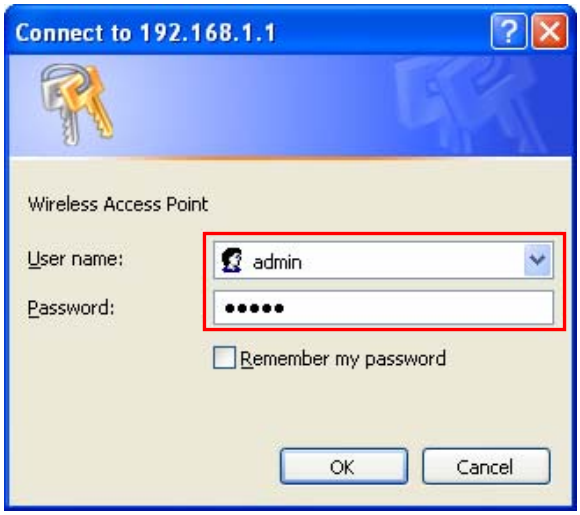
## 2.3 Quick Setup with Wizard

### 2.3.1 Access the Setting Menu

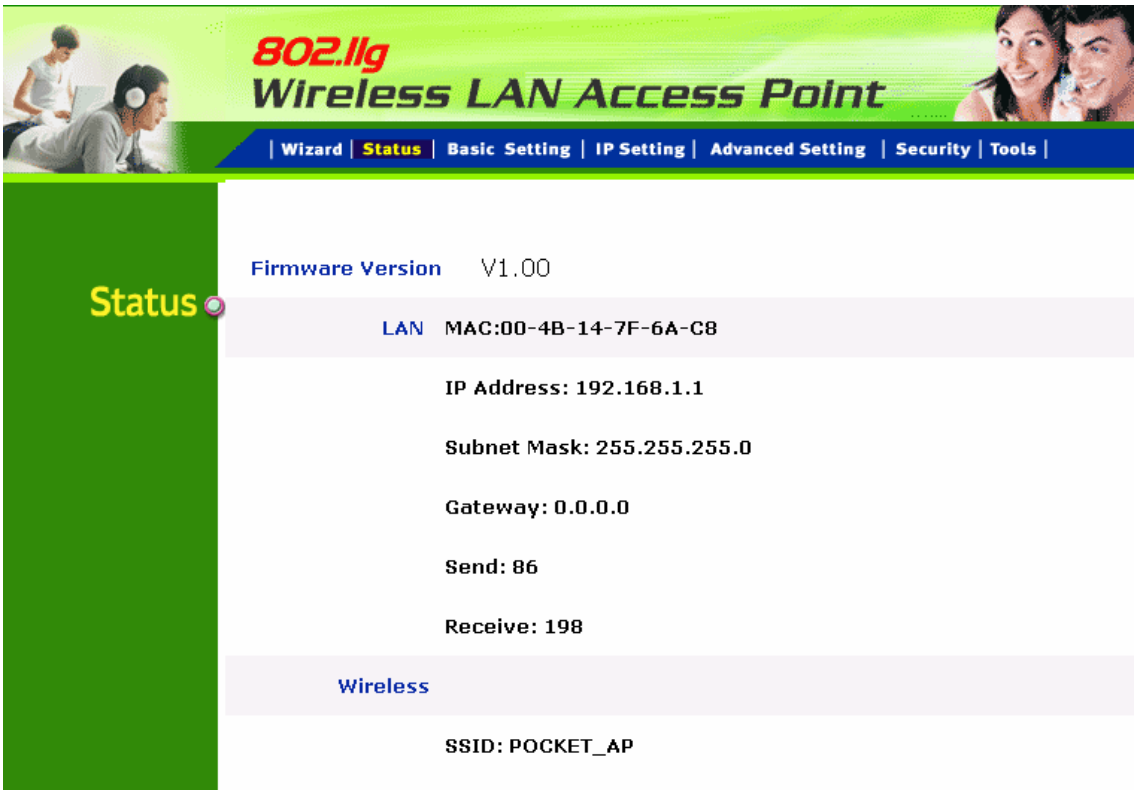
User could start to access the configuration menu anytime by opening a web browser window and typing the IP address of this access point. The default IP is **192.168.1.1**.




The below window will popup. Please enter the user name and password. Both of the default is “admin”.

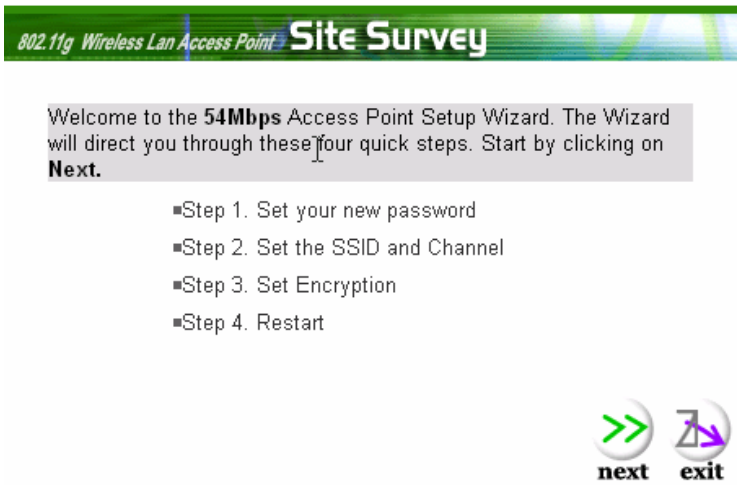


Now, the main menu screen is popup.



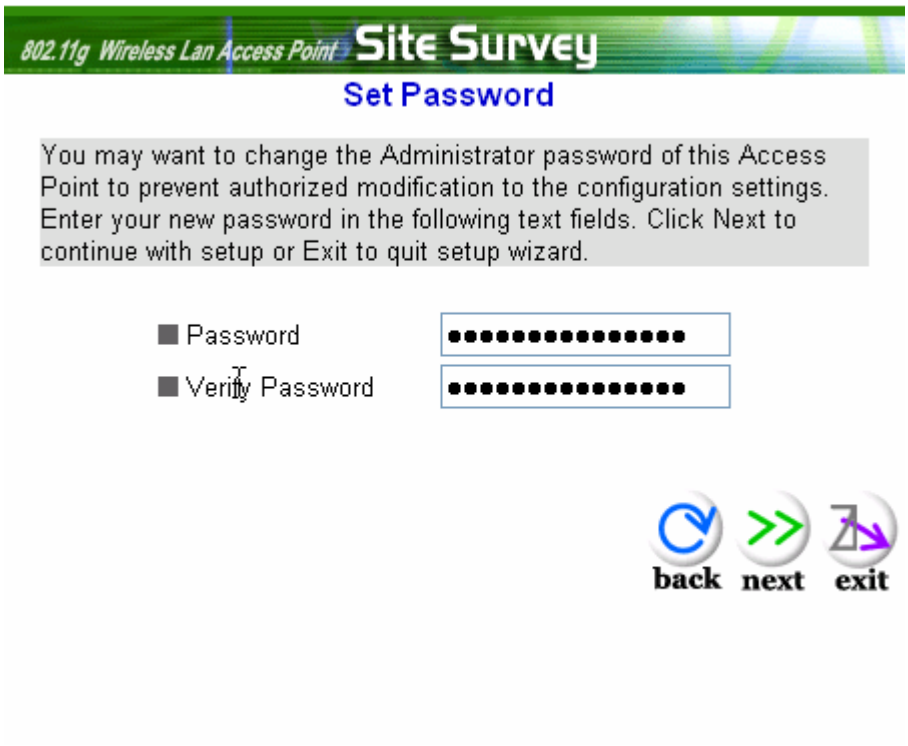

## 2.3.2 Setup with Wizard

Setup wizard is provided as the part of the web configuration utility. User can simply follow the step-by-step process to get Access Point configuration ready to run in 4 easy steps by clicking on the "**Wizard**" button on the function menu. The following screen will appear. Please click "**Next**" to continue.


802.11g Wireless Lan Access Point
Site Survey
Welcome to the 54Mbps Access Point Setup Wizard. The Wizard will direct you through these four quick steps. Start by clicking on Next.
Step 1. Set your new password
Step 2. Set the SSID and Channel
Step 3. Set Encryption
Step 4. Restart
next
exit

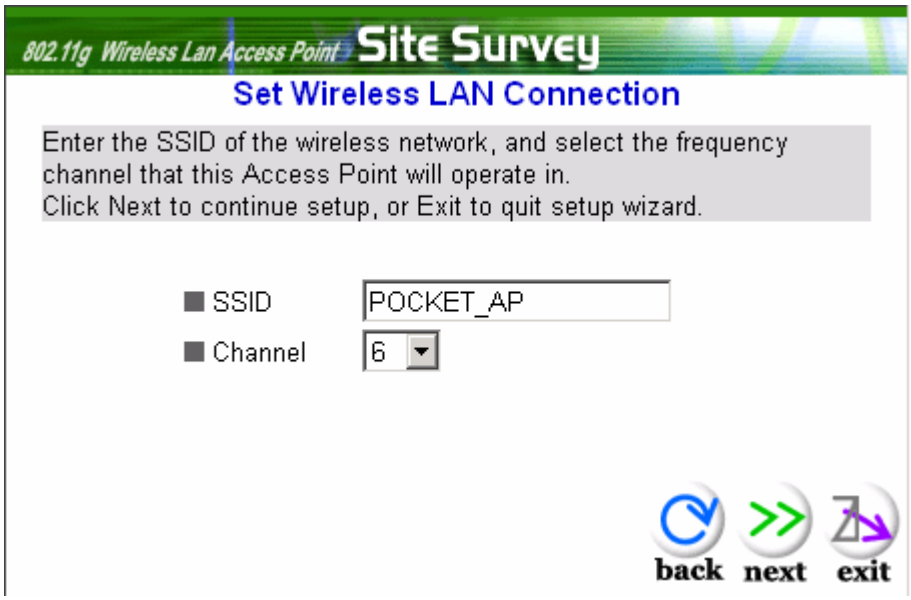
**Step 1: Set Password**

User can change the password and then click "**Next"** to continue.


802.11g Wireless Lan Access Point
Site Survey
Set Password
You may want to change the Administrator password of this Access Point to prevent authorized modification to the configuration settings. Enter your new password in the following text fields. Click Next to continue with setup or Exit to quit setup wizard.
Password
Verify Password
back
next
exit

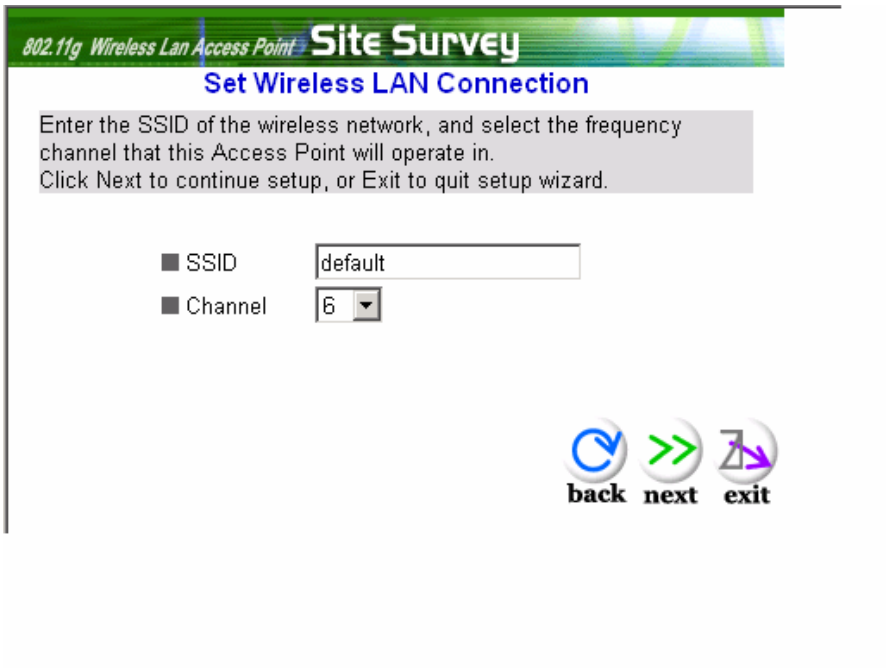
**Step2: Set WLAN Connection**

Please type the name of SSID and select the channel. Then, click "**Next**" to continue.


802.11g Wireless Lan Access Point
Site Survey
Set Wireless LAN Connection
Enter the SSID of the wireless network, and select the frequency channel that this Access Point will operate in.
Click Next to continue setup, or Exit to quit setup wizard.
SSID
POCKET_AP
Channel
6
back
next
exit

**Step 3: Set Wireless LAN Connection**

If user doesn't want to use "default" as the SSID, user can change SSID here. User can also choose different channel to avoid noise coming from other wireless networking devices. Please click "**Next"** to continue.


802.11g Wireless Lan Access Point
Site Survey
Set Wireless LAN Connection
Enter the SSID of the wireless network, and select the frequency channel that this Access Point will operate in.
Click Next to continue setup, or Exit to quit setup wizard.
SSID
default
Channel
6
back
next
exit

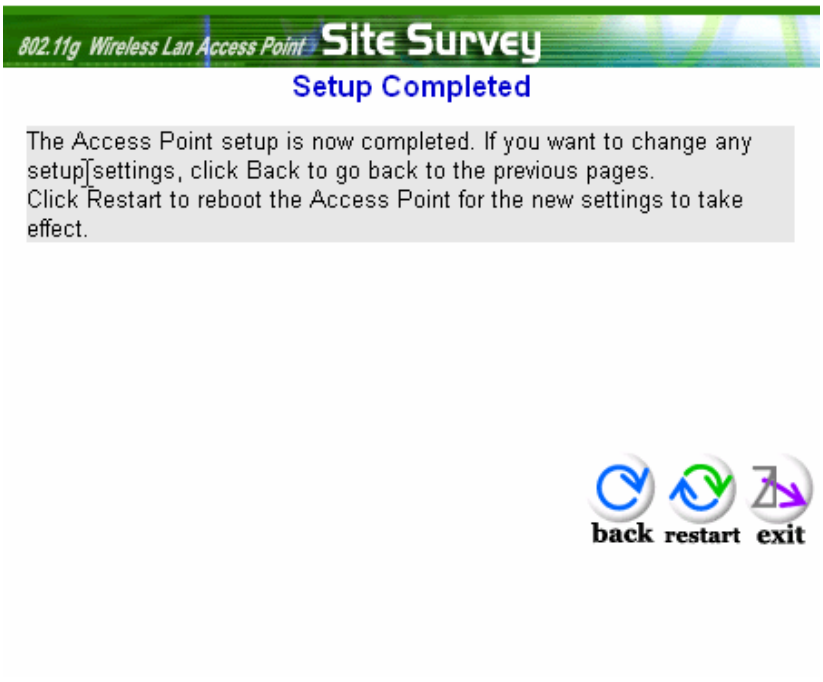
**Step 4: Set WEP Encryption**

If user wants to enable WEP, please click "**Enabled**". Then, select the key size of WEP encryption and enter the key value in the key text box. Please click "**Next"** to continue.

802.11g Wireless Lan Access Point
Site Survey
You may enable WEP security for data encryption by selecting Enabled. Select one of the WEP encryption key size and enter the value of the key in the text fields below.
Click Next to continue with setup, or Exit to quit setup wizard.
WEP Key
Disabled
64bits
128bits
Mode
ASCII
Key
back
next
exit

**Step 5: Restart**

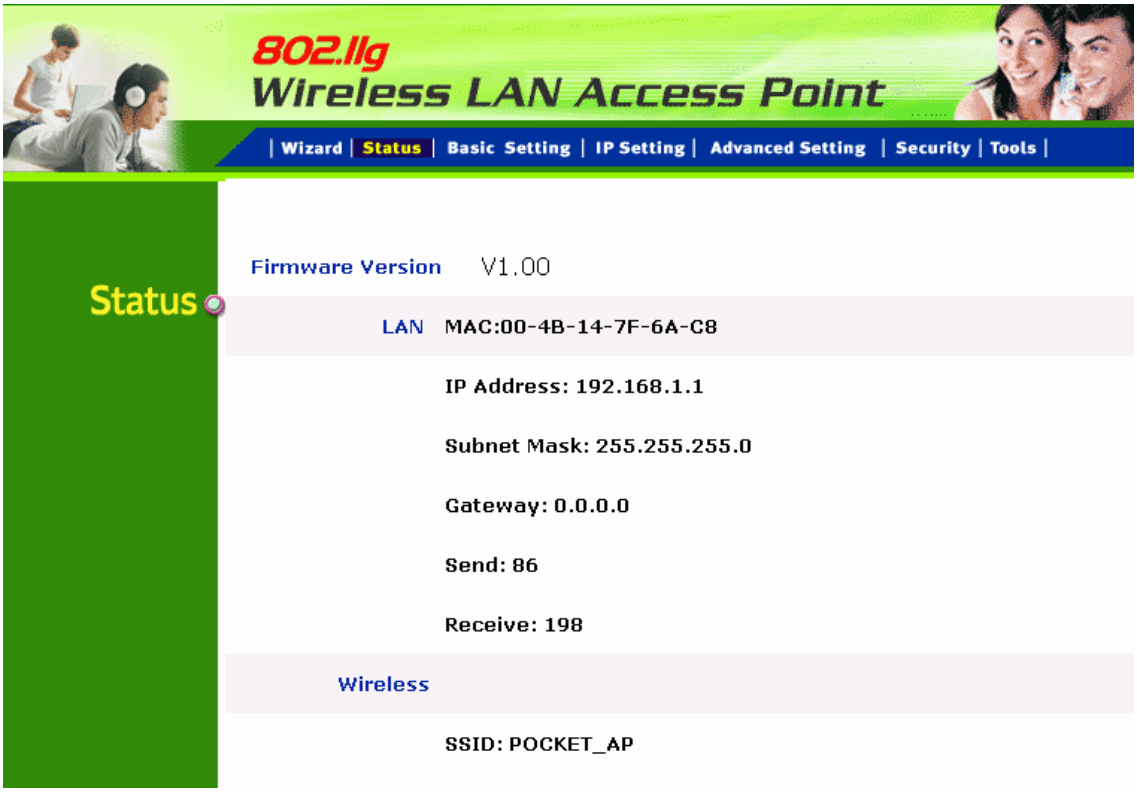
The Setup wizard is now completed. The new settings will be effective after the Access Point restarted. Please click "**Restart**" to reboot the Access Point. If user does not want to make any changes, please click "**exit**" to quit without any changes. User also can go back to modify the setting by clicking "**Back**".


802.11g Wireless Lan Access Point
Site Survey
Setup Completed
The Access Point setup is now completed. If you want to change any setup settings, click Back to go back to the previous pages.
Click Restart to reboot the Access Point for the new settings to take effect.
back
restart
exit

# 3. Configuration Access Point through WEB Browser

## 3.1 Status

This page as below shows the following information.




**Firmware Version:** Shows the current firmware version.

**LAN:** Shows the Mac address, IP address (default: 192.168.1.1), Subnet Mask, Gateway Address. The current LAN traffic calculated in terms of number of packets sent and received by AP through wired connection is also displayed.

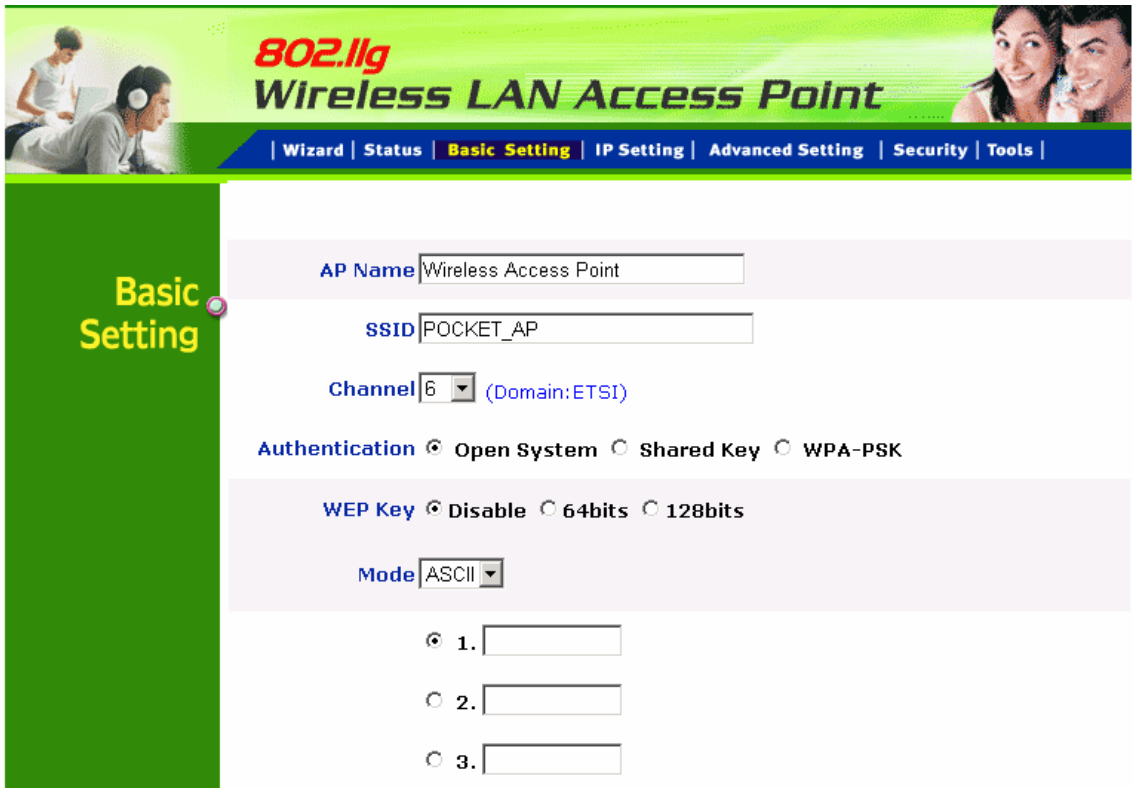
**Wireless:** Shows the Mac address, current ESSID, the status of Encryption Function (Enable or Disable), the current using channel. The current wireless traffic calculated in terms of number of packets sent and received by AP through wireless communication is also displayed.

**View Log:** Once clicked, the page will change to login page. The login page records every event and the time that it happens.

User may clear the entries recorded in the log by clicking the "**Clear Log**" button, and refresh the screen to show the latest log entries by clicking the "**Refresh**" button.

## 3.2 Basic Setting

This is the page allow user to change the access point settings.




**AP Name:** The name of the AP, which can be used to identify the Access Point among the all the Access Points in the wireless network.

**SSID:** Service Set Identifier, which is a unique name shared among all clients and nodes in a wireless network. The SSID must be identical for each clients and nodes in the wireless network.

**Channel:** The channel that AP will operate in. User can select the channel range from 1 to 11 for North America (FCC) domain, 1 to 13 for European (ETSI) domain and 1 to 14 for Japanese domain.

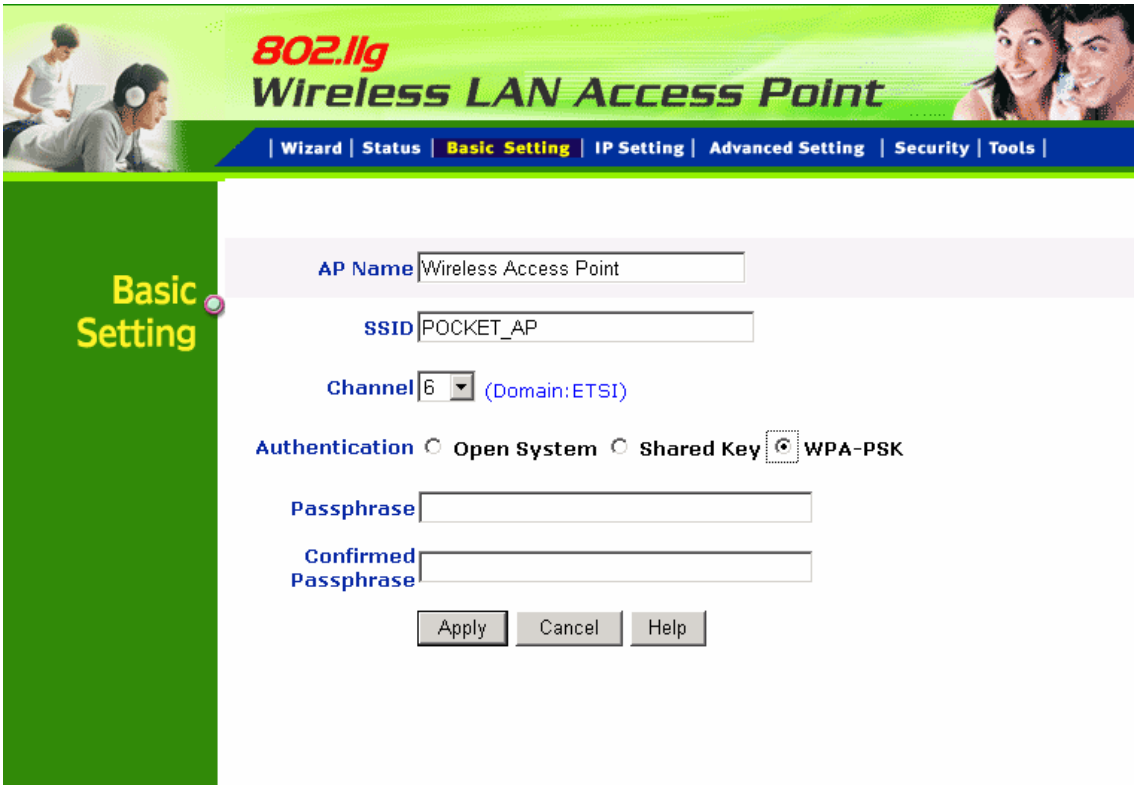
**Authentication Type:** The authentication type default is set to open system. There are four options: open system; shared key; WPA and WPA-PKS. User may want to set to Shared Key when the clients and AP in the same wireless network enable the WEP encryption. All the nodes and hosts on the network must use the same authentication type.

**WEP Key:** To disable WEP security, click on the “Disable” option. To enable WEP security, there are 2 types to select – 64bits and 128 bits. When it is selected, the key value must be entered in ASCII or HEX format.

**Note:** When WEP security is enabled, all the wireless clients that wish to connect to the Access Point must also have WEP enabled with the identical WEP Key value entered.

**Apply**: For the changes made to any of the items above to be effective, click “**Apply**”. The new settings are now been saved to Access Point and will be effective once the Access Point restarts.

If **WPA-PSK** is enabled, user needs to set the key in the passphrase field as the below screen. The key length should be 8 characters at least.




**Note:** Once **WPA-PSK** function enables, it will take some time to make the setting active.

## 3.3 IP Setting

This page allows user to configure the IP and DHCP settings of the Access Point.

802.11g
Wireless LAN Access Point
Wizard | Status | Basic Setting | IP Setting | Advanced Setting | Security | Tools
IP Setting
LAN IP
Obtain IP Automatically
Fixed IP
Address 192 . 168 . 1 . 1
Subnet Mask 255 . 255 . 255 . 0
Gateway 0 . 0 . 0 . 0
DHCP Server
On
Off
IP Range From 192 . 168 . 1 . 100
to 192 . 168 . 1 . 199
DNS Server 0 . 0 . 0 . 0
Apply
Cancel
Help

The default IP address of this access point is 192.168.1.1 with the subnet mask of 255.255.255.0. User can type in other values for IP Address, Subnet Mask and Gateway and click "**Apply**" button for the changes to be effective.

User can also set the Access Point to obtain the IP from a DHCP server, but it is not recommended. Select the option "Obtain IP Automatically" and click "**Apply**" button for the changes to be effective.

**DHCP Server:** It is not recommended to enable the DHCP Server if user has a DHCP server running in LAN network because it probably will cause possible the conflict of IP assignment. Enable the DHCP server function by selecting the option "**On**", and enter the IP range. **IP range :** When user set the IP range that Client can get the IP in the range.

Click "**Apply**" for the changes to be effective.

**DNS server:** If User's local Ethernet support DNS function, user can fix the DNS address in the space.

## 3.4 Advanced Setting

This page contains configurations for advanced users, which the change reflects the wireless performance and operating modes.

802.11g
Wireless LAN Access Point
Wizard | Status | Basic Setting | IP Setting | Advanced Setting | Security | Tools |
Advanced Setting
Beacon Interval 100 (msec, range:1~1000, default:100)
RTS Threshold 2432 (range: 256~2432, default:2432)
Fragmentation Threshold 2346 (range: 256~2346, default:2346, even number only)
DTIM Interval 3 (range: 1~255, default:3)
SSID broadcast Enable Disable
Mode Setting G Mode Mix Mode
TX Rates 36 (Mbps)
Apply Cancel Help

**AP** – The normal Access Point operating mode which forms a wireless ESS network with its wireless clients.

**Beacon Interval:** To set the period of time in milliseconds that AP sends out a beacon. Default is 100 milliseconds.

**RTS Threshold:** To set the size of RTS/CTS packet size. Default is 2432 bytes.

**Fragmentation Threshold**: To set the number of bytes used for the fragmentation boundary for directed messages. Default is 2436 bytes.

**DTIM Interval:** This value indicates the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the access point has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM interval value. Access point clients hear the beacons and awaken to receive the broadcast and multicast messages.

**SSID Broadcast:** While SSID Broadcast is enabled, all wireless clients will be able to communicate with the access point. For secure purpose, user may want to disable SSID broadcast to allow only those wireless clients with the AP SSID to communicate with the access point.

**Mode setting :** 1) G mode- Only support 11g client to connect!

2) Mix mode- Support 11b&11g client to connect!

**TX Rates:** User also can fix the transmission at specific data rate, if choose “Auto” data rate, the Wireless Ethernet Adapter will change the data rate to have the best receive or transmit quality

## 3.5 Security

This page is where user configures the security features supported by this Access Point.

**Password:** Allow user to change the new login password. Here are the necessary steps:

1. Enter the new password in the "**AP Password New:**" field.
2. Enter the new password again in the "**Confirm**" field.
3. Click "**Apply**"

**MAC Filter:** MAC Filter function controls the MAC of the network devices that are listed in this table for access authorization or denial. When MAC Filter is enabled, by selecting the "**Enabled**" radio box, select one of two choices:

●Only deny PCs with MAC listed below to access device

●Only allow PCs with MAC listed below to access device

The maximum number of MAC addresses that can be stored is 50. User can browse through the MAC address saved by selecting the drop-down box.

For any changes made in the security page, click "**Apply**" for the changes to be effective.

## 3.6 Tools

Four functions are provided in this page, Backup, Restore Settings, Restore default settings and Firmware Upgrade.

**Backup Settings:** Click on "**Backup**" button, which will open a FileSave Dialog box, where user gets to save all the current settings and configurations to a file.

**Restore Settings:** Click on the "**Browse**" button to open a FileOpen Dialog box, where user gets to select the file, which saves previous settings and configurations. Upon selecting the saved file, click "**Restore**" and complete the restore process when the access point re-operates after it restarts.

**Restore to default settings:** Click on "**Default**" button to restore the access point back to its manufacture default settings.

**Firmware Upgrade:** Click on the "**Browse**" button to open a FileOpen Dialog box, where gets to select the firmware file, which download from the web for the latest version. Upon selecting the firmware file, click "**Upgrade**" and complete the firmware upgrade process when the Access Point re-operates after it restarts.

# 4. Getting Start with Wireless Ethernet Adapter

## 4.1 Know the Wireless Ethernet Adapter

**Ports:**

- Power Receptor
- Reset Button
- RJ-45 Ethernet Port
  Cross-over cable is required to connect to computer directly

**LEDs:**

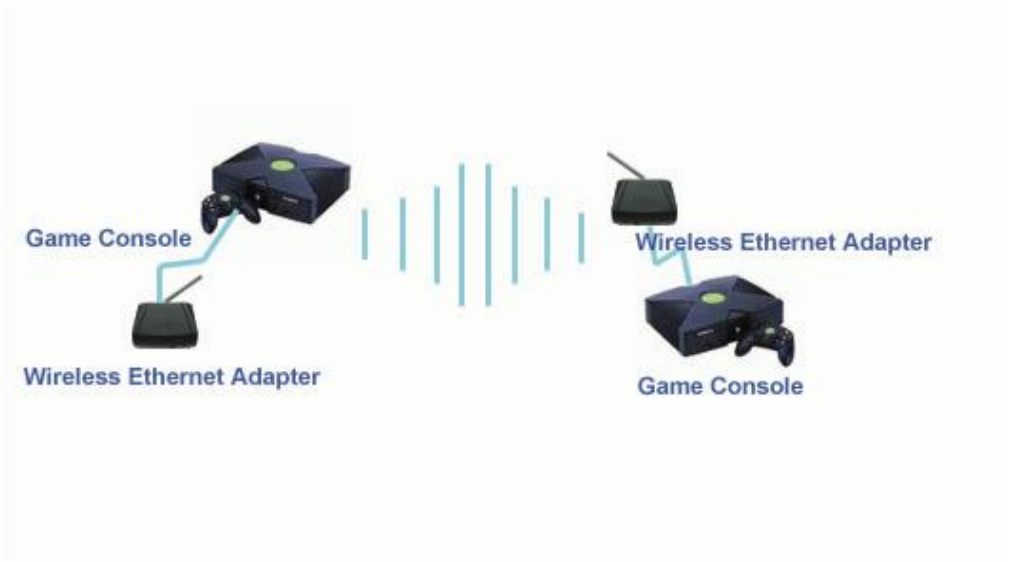
- Power LED: ON when the unit is powered up
- LAN LED: ON indicates LAN connection; BLINK indicates LAN activity
- WLAN LED: ON indicates WLAN is working; BLINK indicates wireless activity.

## 4.2 Connect to the Wireless Ethernet Adapter

This wireless Ethernet adapter transforms the Ethernet-enabled devices to have the wireless function. The wireless Ethernet adapter enables wireless communication over network. There are two examples shown as the below.

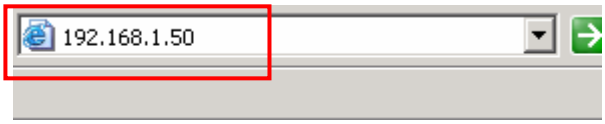
**Infrastructure Mode:**

**Ad-Hoc Mode:**




## 4.2.1 Access the Setting Menu

User could start to access the configuration menu anytime by opening a web browser window by typing the IP address of this access point. The default IP is **192.168.1.50**.

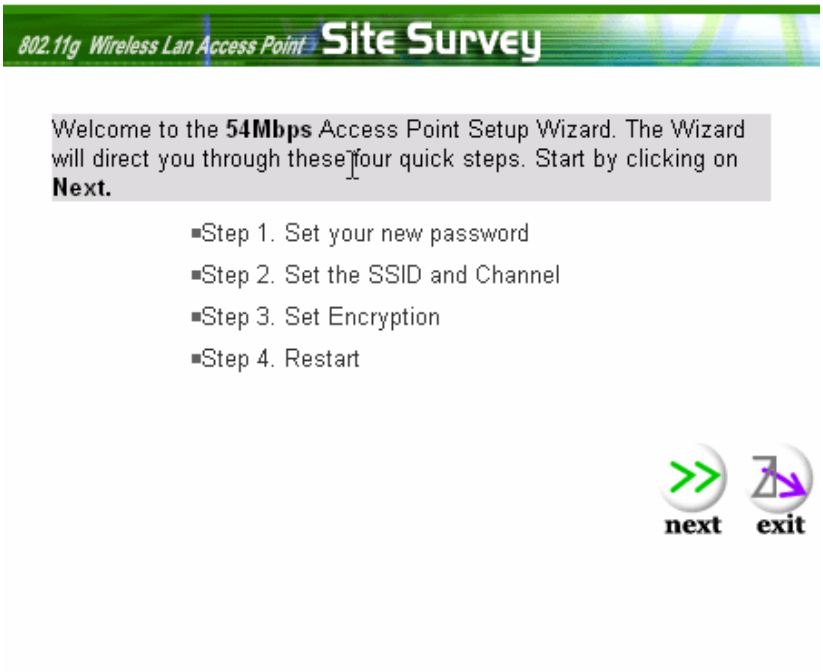



The below window will popup. Please enter the user name and password. Both of the default is “admin”.

Now, the main menu screen is popup.

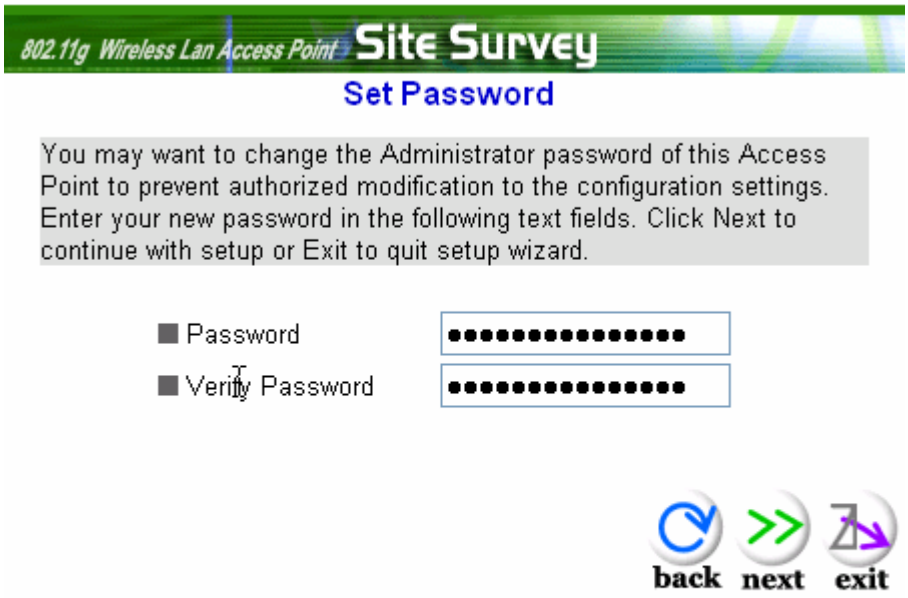
### 4.2.2 Setup with Wizard

Setup wizard is provided as the part of the web configuration utility. User can simply follow the step-by-step process to get Access Point configuration ready to run in 4 easy steps by clicking on the "**Wizard**" button on the function menu. The following screen will appear. Please click "**Next**" to continue.


802.11g Wireless Lan Access Point
Site Survey
Welcome to the 54Mbps Access Point Setup Wizard. The Wizard will direct you through these four quick steps. Start by clicking on Next.
Step 1. Set your new password
Step 2. Set the SSID and Channel
Step 3. Set Encryption
Step 4. Restart
next
exit

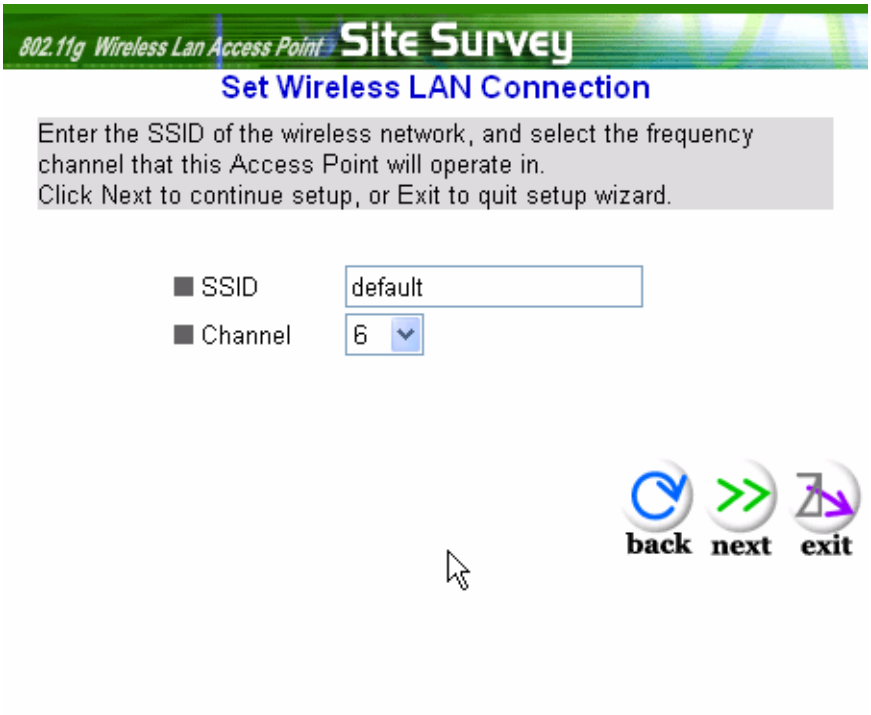
**Step 1: Set Password**

User can change the password and then click "**Next"** to continue.


802.11g Wireless Lan Access Point
Site Survey
Set Password
You may want to change the Administrator password of this Access Point to prevent authorized modification to the configuration settings. Enter your new password in the following text fields. Click Next to continue with setup or Exit to quit setup wizard.
Password
Verify Password
back
next
exit

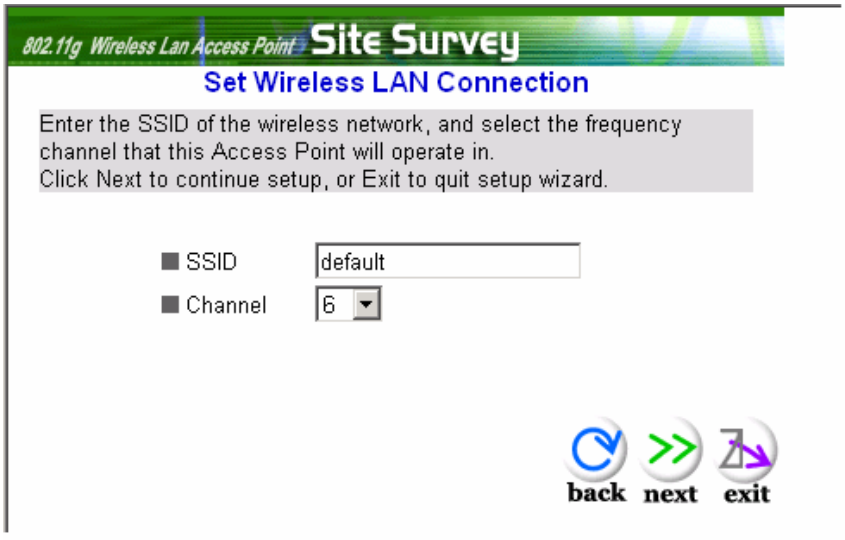
**Step2: Set WLAN Connection**

Please type the name of SSID and select the channel. Click "**Next**" to continue.


802.11g Wireless Lan Access Point
Site Survey
Set Wireless LAN Connection
Enter the SSID of the wireless network, and select the frequency channel that this Access Point will operate in.
Click Next to continue setup, or Exit to quit setup wizard.
SSID
default
Channel
6
back
next
exit

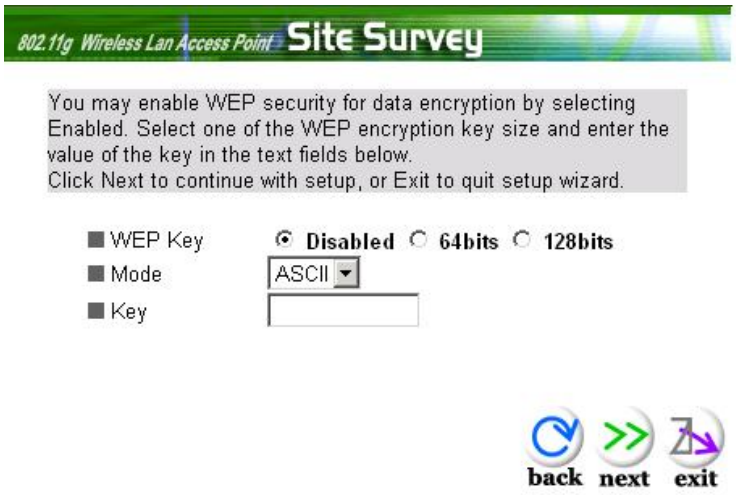
**Step 3: Set Wireless LAN Connection**

IF user doesn't want to use "default" as the SSID, user can change SSID here. Also user can choose different channel to avoid noise coming from other wireless networking devices. Please click "**Next"** to continue.


802.11g Wireless Lan Access Point
Site Survey
Set Wireless LAN Connection
Enter the SSID of the wireless network, and select the frequency channel that this Access Point will operate in.
Click Next to continue setup, or Exit to quit setup wizard.
SSID
default
Channel
6
back
next
exit

**Step 4: Set WEP Encryption**

If user wants to enable WEP, please click "**Enabled**". Then, select the key size of WEP encryption and enter the key value in the key text box. Click "**Next"** to continue.


802.11g Wireless Lan Access Point
Site Survey
You may enable WEP security for data encryption by selecting Enabled. Select one of the WEP encryption key size and enter the value of the key in the text fields below.
Click Next to continue with setup, or Exit to quit setup wizard.
WEP Key
Disabled
64bits
128bits
Mode
ASCII
Key
back
next
exit

**Step 5: Restart**

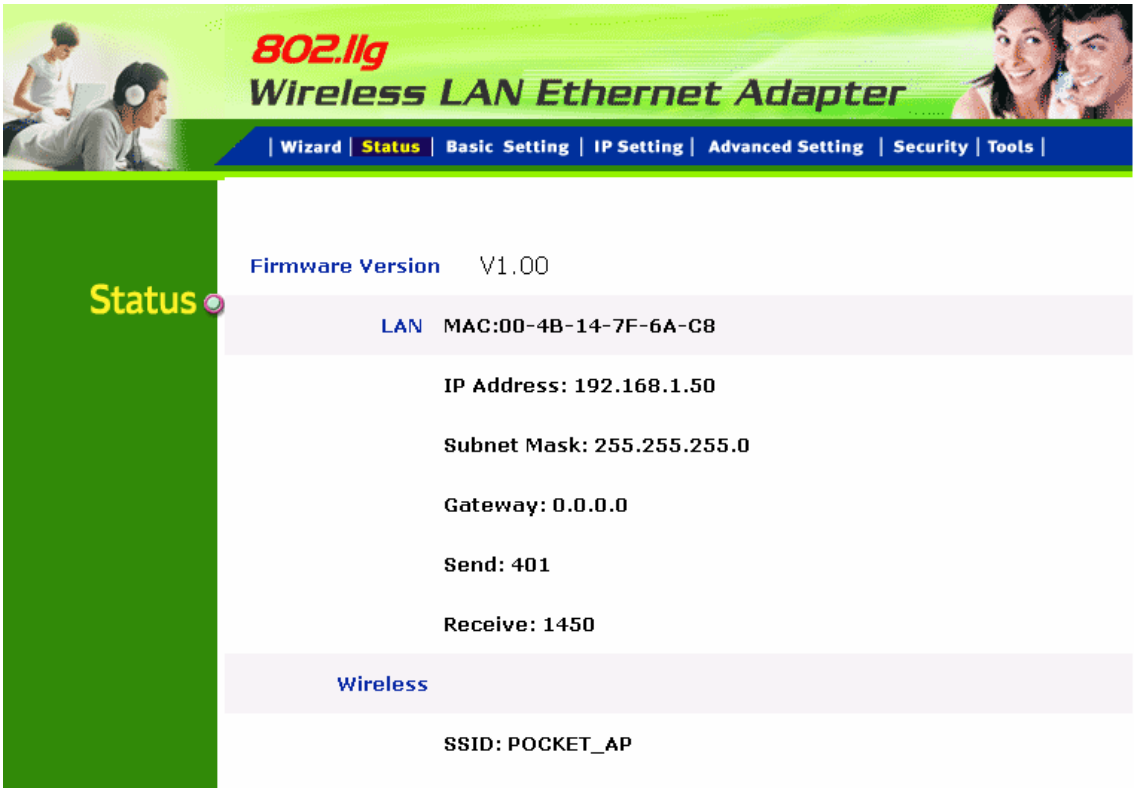
The Setup wizard is now completed. The new settings will be effective after the Access Point restarted. Please click "**Restart**" to reboot the Access Point. If user does not want to make any changes, please click "**exit**" to quit without any changes. User also can go back to modify the setting by clicking "**Back**".

802.11g Wireless Lan Access Point
Site Survey
Setup Completed
The Access Point setup is now completed. If you want to change any setup settings, click Back to go back to the previous pages.
Click Restart to reboot the Access Point for the new settings to take effect.
back
restart
exit

# 5. Configuration Wireless Ethernet Adapter through WEB Browser

## 5.1 Status

This page as below shows the following information.




**Firmware Version:** Shows the current firmware version.

**LAN:** Shows the Mac address, IP address (default: 192.168.1.50), Subnet Mask, Gateway Address. The current LAN traffic calculated in terms of number of packets sent and received by AP through wired connection is also displayed.

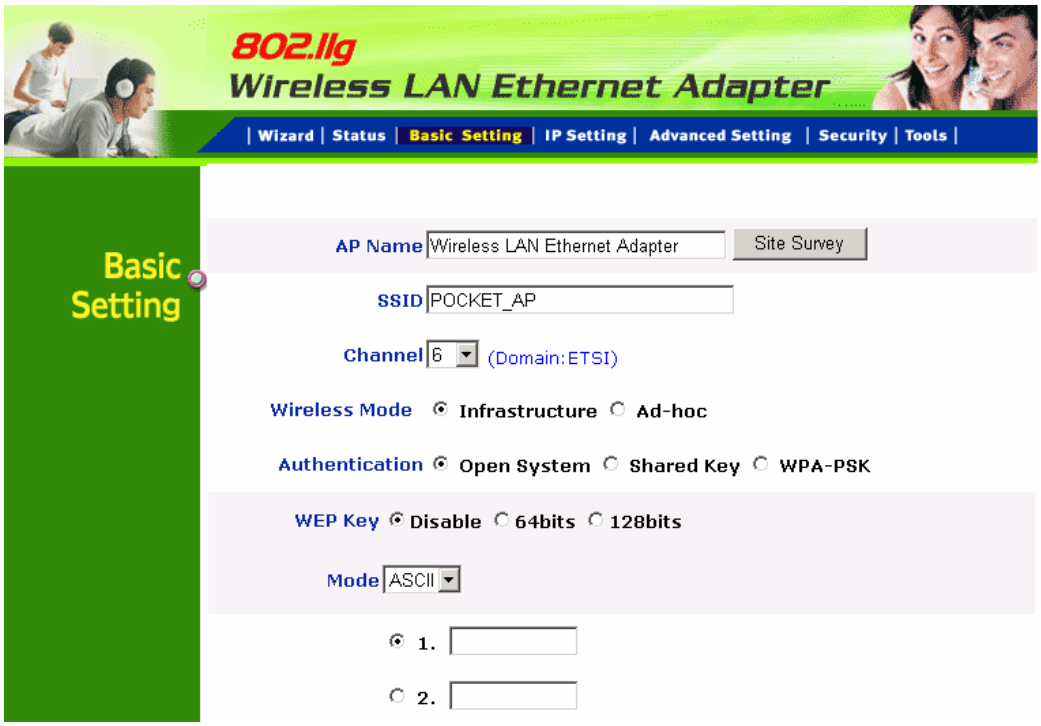
**Wireless:** Shows the Mac address, current ESSID, the status of Encryption Function (Enable or Disable), the current using channel. The current wireless traffic calculated in terms of number of packets sent and received by AP through wireless communication is also displayed.

**View Log:** Upon clicked, the page will change to log page. The log page records every event and the time that it happens.

User may clear the entries recorded in the log by clicking the "**Clear Log**" button, and refresh the screen to show the latest log entries by clicking "**Refresh**" button.

## 5.2 Basic Setting

This is the page allow to change the settings of access point.



**AP Name:** The name of the AP, which can be used to identify the Access Point among the all the Access Points in the wireless network.

**SSID:** Service Set Identifier, which is a unique name shared among all clients and nodes in a wireless network. The SSID must be identical for each clients and nodes in the wireless network.

**Channel:** The channel that AP will operate in. User can select the channel range of 1 to 11 for North America (FCC) domain, 1 to 13 for European (ETSI) domain and 1 to 14 for Japanese domain.

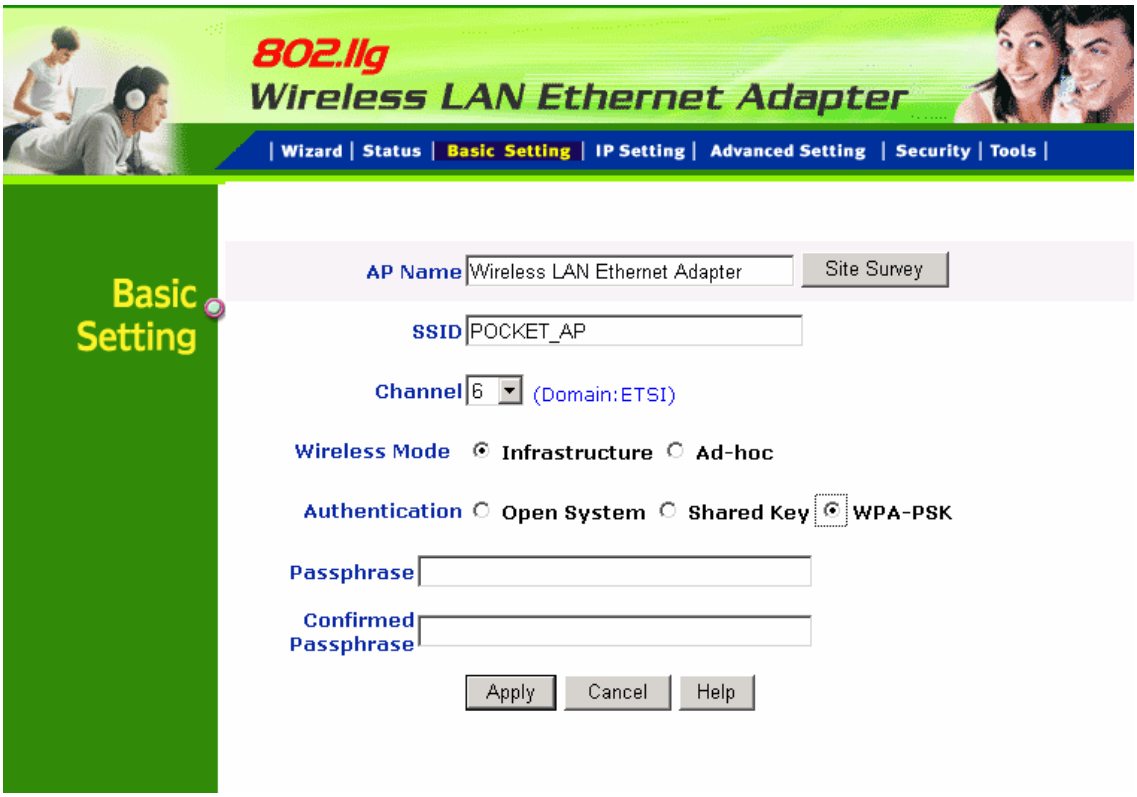
**Authentication Type:** The authentication type default is set to open system. There are four options: open system; shared key; WPA; WPA-PKS. User may want to set to Shared Key when the clients and AP in the same wireless network enable the WEP encryption. All the nodes and hosts on the network must use the same authentication type.

**WEP Key:** To disable WEP security, click on the "**Disable**" option. To enable WEP security, there are 2 types to select – 64bits and 128 bits. When it is selected, the key value must be entered in ASCII or HEX format.

**Note:** When WEP security is enabled, all the wireless clients that wish to connect to the Access Point must also have WEP enabled with the identical WEP Key value entered.

**Apply**: For the changes made to any of the items above to be effective, click "**Apply**". The new settings are now been saved to Access Point and will be effective once the Access Point restarts.

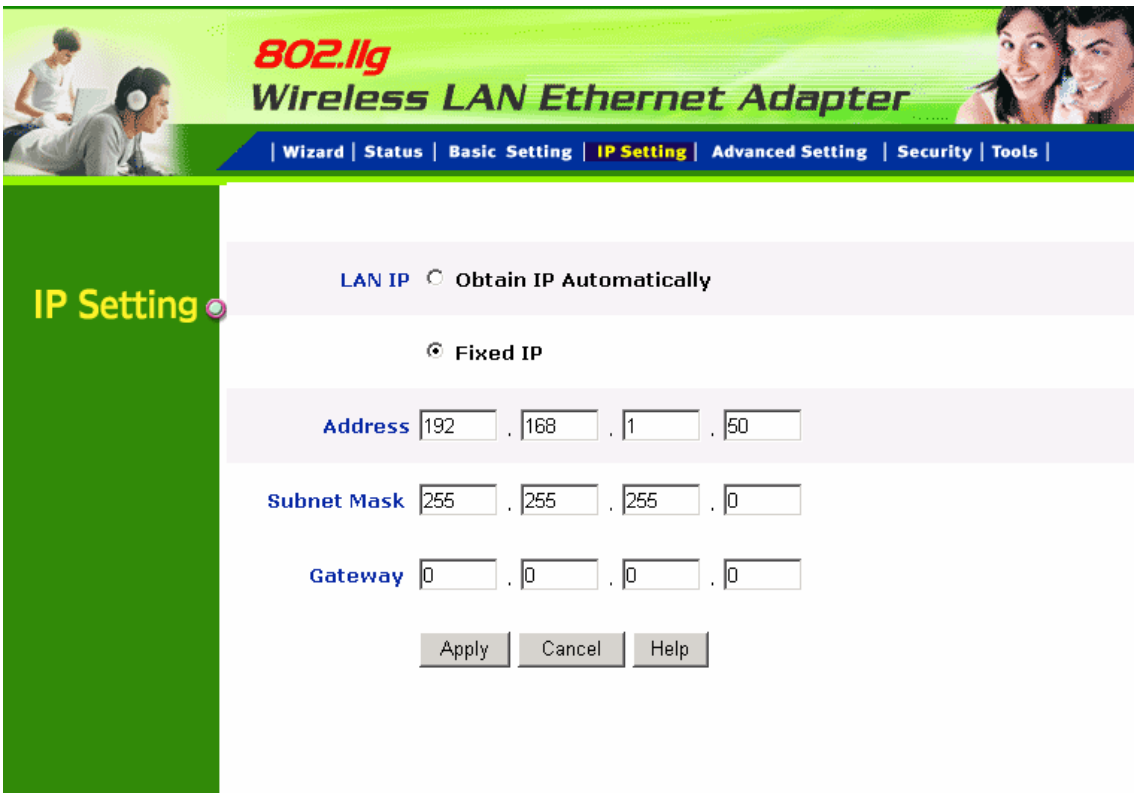
If **WPA-PSK** is enabled, users need to set the key in the passphrase field as the below screen. The key length should be 8 characters at least.




**Note:** Once **WPA-PSK** function enables, it will take some time to make the setting active.

## 5.3 IP Setting

This page allows users to configure the IP and DHCP settings of the Access Point.

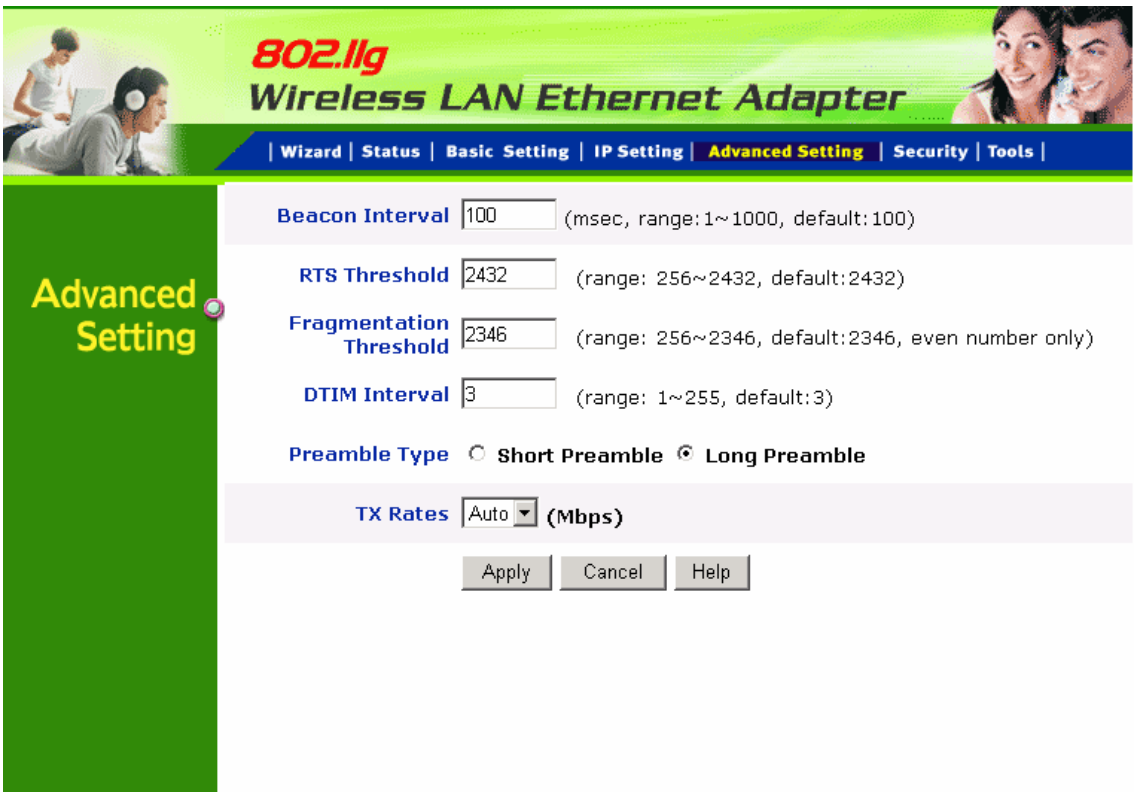

802.11g
Wireless LAN Ethernet Adapter
Wizard | Status | Basic Setting | IP Setting | Advanced Setting | Security | Tools
IP Setting
LAN IP
Obtain IP Automatically
Fixed IP
Address 192 . 168 . 1 . 50
Subnet Mask 255 . 255 . 255 . 0
Gateway 0 . 0 . 0 . 0
Apply
Cancel
Help

The default IP address of this Wireless Ethernet Adapter is 192.168.1.50 with the subnet mask of 255.255.255.0. User can type in other values for IP Address, Subnet Mask and Gateway and click "**Apply**" button for the changes to be effective.

User can also set the Wireless Ethernet Adapter to obtain the IP from a DHCP server, but it is not recommended. Select the option "**Obtain IP Automatically**" and click "**Apply**" button for the changes to be effective.

## 5.4 Advanced Setting

This page contains configurations for advanced users, which the change reflects, the wireless performance and operating modes.


802.11g
Wireless LAN Ethernet Adapter
Wizard | Status | Basic Setting | IP Setting | Advanced Setting | Security | Tools
Advanced Setting
Beacon Interval 100 (msec, range:1~1000, default:100)
RTS Threshold 2432 (range: 256~2432, default:2432)
Fragmentation Threshold 2346 (range: 256~2346, default:2346, even number only)
DTIM Interval 3 (range: 1~255, default:3)
Preamble Type Short Preamble Long Preamble
TX Rates Auto (Mbps)
Apply Cancel Help

**Beacon Interval:** To set the period of time in milliseconds that AP sends out a beacon. Default is 100 milliseconds.

**RTS Threshold:** To set the size of RTS/CTS packet size. Default is 2432 bytes.

**Fragmentation Threshold**: To set the number of bytes used for the fragmentation boundary for directed messages. Default is 2436 bytes.

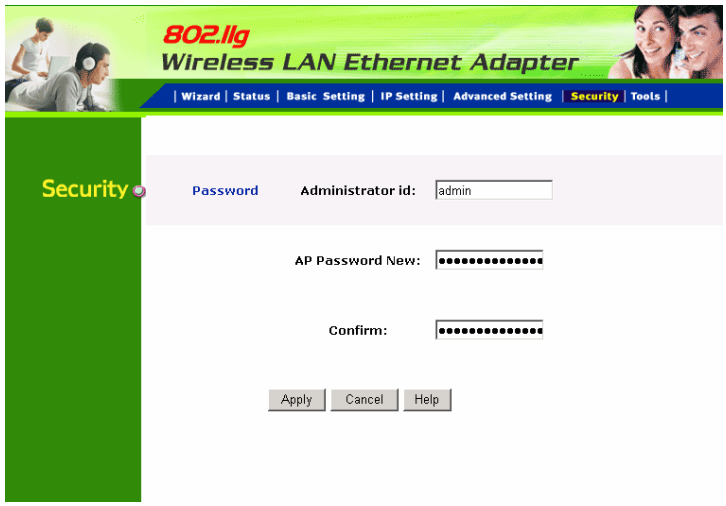
**DTIM Interval:** This value indicates the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the access point has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM interval value. Access point clients hear the beacons and awaken to receive the broadcast and multicast messages.

**Preamble:** Select **Long** or **Short** Preamble type. Preamble is a sequence of bits transmitted at 1Mbps that allows the PHY circuitry to reach steady-state demodulation and synchronization of bit clock and frame start. Two different preambles and headers are defined: the mandatory supported Long Preamble and header, which interoperates with the 1 Mbit/s and 2 Mbit/s DSSS specification (as described in IEEE Std 802.11), and an optional Short Preamble and header (as described in IEEE Std 802.11b). At the receiver, the Preamble and header are processed to aid in demodulation and delivery of the PSDU. The Short Preamble and header may be used to minimize overhead and, thus, maximize the network data throughput. However, the Short Preamble is supported only from the IEEE 802.11b (High- Rate) standard and not from the original IEEE 802.11. That means that stations using Short-Preamble cannot communicate with stations implementing the original version of the protoco

**TX Rates:** User also can fix the transmission at specific data rate, if choose "Auto" data rate, the Wireless Ethernet Adapter will change the data rate to have the best receive or transmit quality.

## 5.5 Security

This page is where configures the security features supported by Access Point Client.

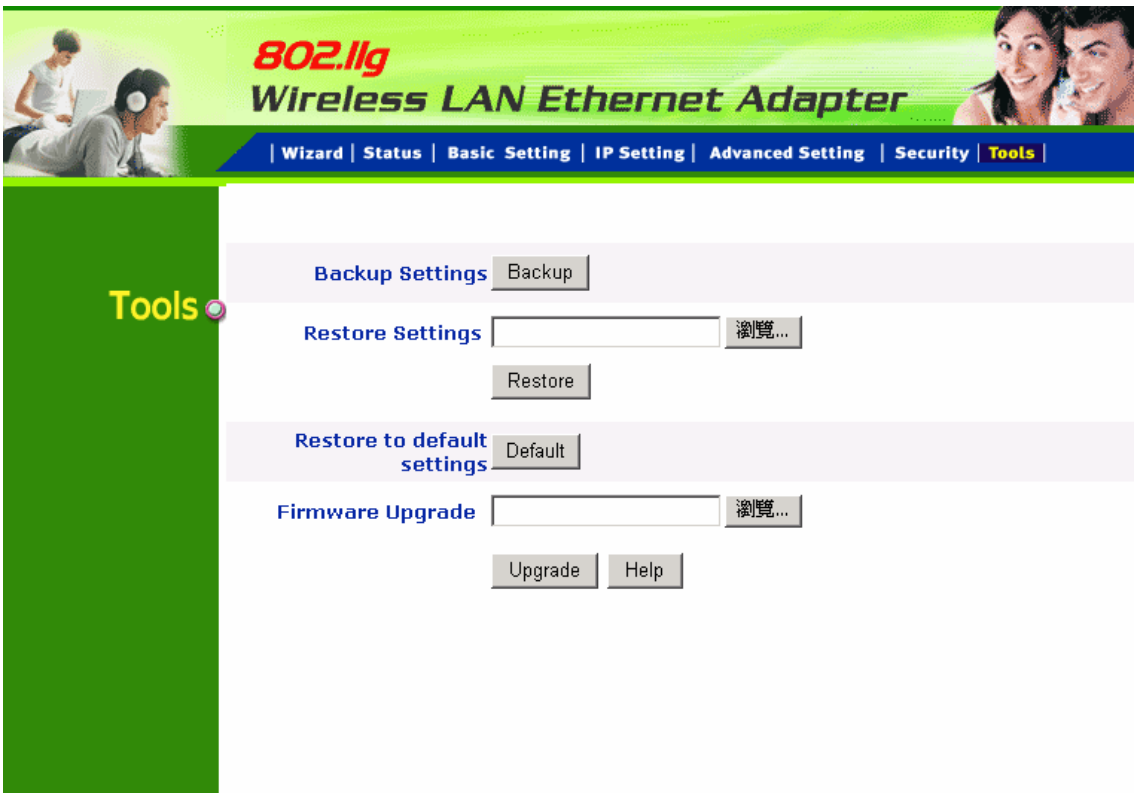



**Password:** Allow to change the new login password. Here are the necessary steps:

1. Enter the new password in the "**AP Password New:**" field.
2. Enter the new password again in the "**Confirm**" field.
3. Click "**Apply**"

## 5.6 Tools

Four functions are provided in this page, Backup, Restore Settings, Restore default settings and Firmware Upgrade.




**Backup Settings:** Click on "**Backup**" button, which will open a FileSave Dialog box, where gets to save all the current settings and configurations to a file.

**Restore Settings:** Click on the "**Browse**" button to open a FileOpen Dialog box, where gets to select the file, which saves previous settings and configurations. Upon selecting the saved file, click "**Restore**" and complete the restore process when the access point re-operates after it restarts.

**Restore to default settings:** Click on "**Default**" button to restore the access point back to its manufacture default settings.

**Firmware Upgrade:** Click on the "**Browse**" button to open a FileOpen Dialog box, where get to select the firmware file, which download from the web for the latest version. Upon selecting the firmware file, click "**Upgrade**" and complete the firmware upgrade process when the Access Point re-operates after it restarts.

# 6. Getting Start with Wireless Router

## 6.1 Know the 802.11g Wireless Router

**Ports:**

- Power Receptor
- Reset Button
- RJ-45 Ethernet Port
  Cross-over cable is required to connect to computer directly
- There is no visual LAN port for Pocket AP.

**LEDs:**

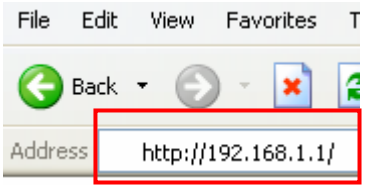
- Power LED: ON when the unit is powered up
- LAN LED: ON indicates LAN connection; BLINK indicates LAN activity
- WLAN LED: ON indicates WLAN is working; BLINK indicates wireless activity.

## 6.2 Connect to the 802.11g Wireless Router

### 6.2.1 Access the Setting Menu

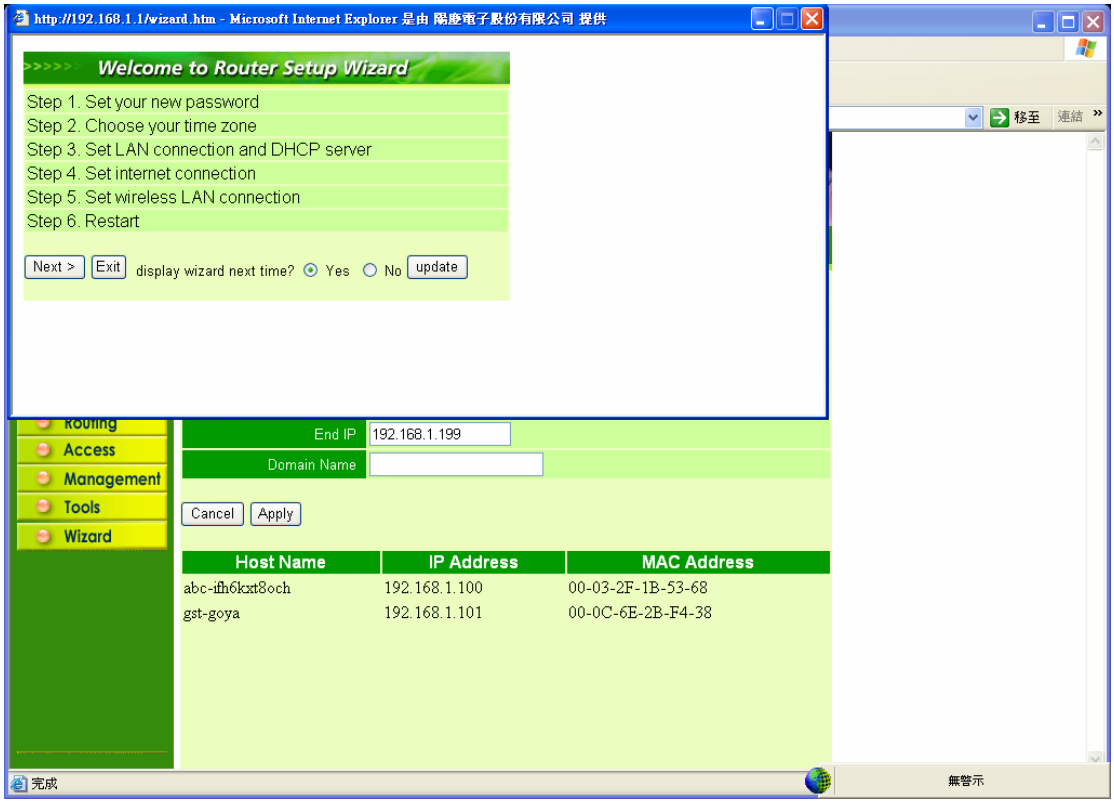
User could start to access the configuration menu anytime by opening a web browser window by typing the IP address of this wireless router. The default IP is 192.168.1.1.

**Note:** to configure the settings must through the wireless connection, instead of RJ45 cable.



The below window will popup. Please enter the user name and password. Both of the default is “admin”.

Now, the main menu screen is popup.

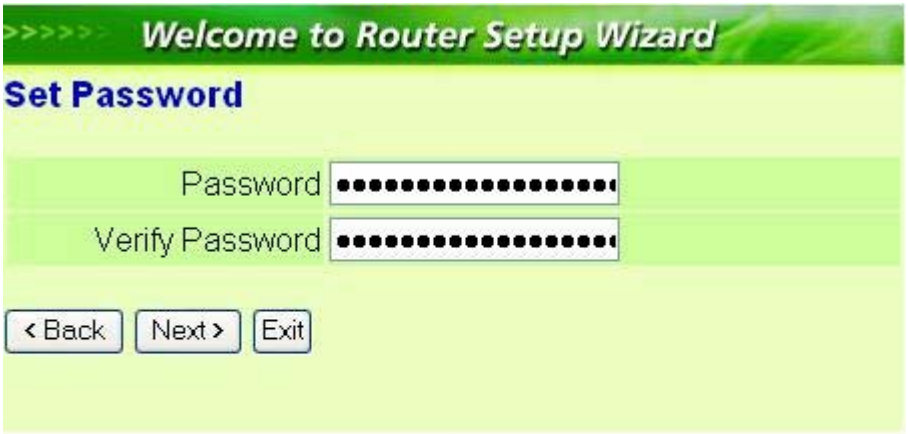


### 6.2.2 Quick Setup with Wizard

Setup wizard is provided as the part of the web configuration utility. User can simply follow the step-by-step process to get wireless router configuration ready to run in 6 easy steps by clicking on the "**Wizard**" button on the function menu. The following screen will appear. Please click "**Next**" to continue.

**Step 1: Set new Password**

User can change the password and then click "**Next"** to continue.



**Step2: Choose time zone**

Select properly time zone from the drop down list. Please click "**Next"** to continue.

**Step 3: Set LAN connection and DHCP server**

Set IP address and mask. The default IP is 192.168.1.1. If user likes to enable DHCP, please click "**Enabled**". DHCP enabled is able to automatically assign IP addresses. Please assign the range of IP addresses in the fields of **"Range start"** and **"Range end"**. Please click "**Next"** to continue.

**Step 4: Set Internet connection**

Select how the router will set up the Internet connection: Obtained IP automatically; Fixed IP address; PPPoE to obtain IP automatically; PPPoE with a fixed IP address; PPTP.

**Obtain IP automatically (DHCP client)**:

If user wants to enabled DHCP server, choose "**Obtain IP automatically (DHCP client)**" to have the router assign IP addresses automatically.

**Fixed IP Address:**

If Fixed IP address is assigned, the below screen will pop up. Please set the WAN address and DNS server.

Welcome to Router Setup Wizard
Set Fixed IP Address
WAN IP Address 0.0.0.0
WAN Subnet Mask 0.0.0.0
WAN Gateway Address 0.0.0.0
DNS Server Address 1 0.0.0.0
DNS Server Address 2 0.0.0.0
DNS Server Address 3 0.0.0.0
< Back
Next >
Exit

**PPPoE to obtain IP automatically:**

**PPPoE with a fixed IP address:**

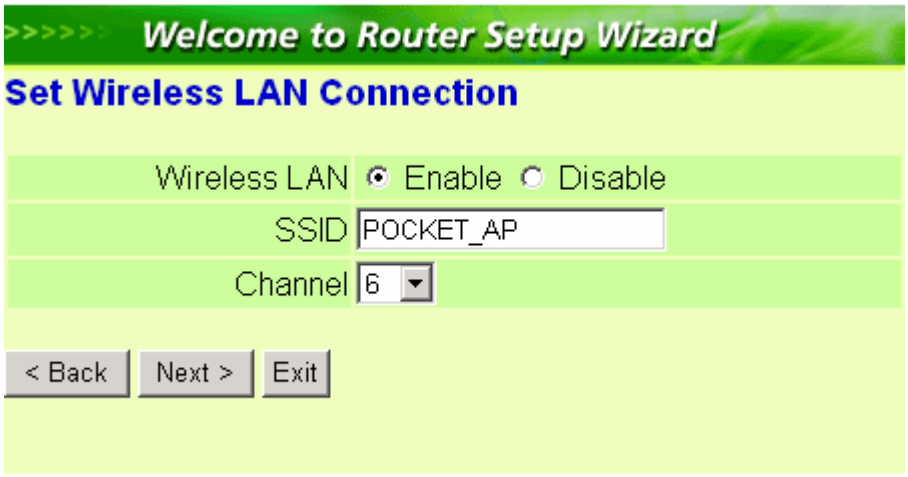
**PPTP:**

Welcome to Router Setup Wizard
Select Internet Connection Type
Obtain IP automatically (DHCP client)
Fixed IP address
PPPoE to obtain IP automatically
PPPoE with a fixed IP address
PPTP
< Back
Next >
Exit

Welcome to Router Setup Wizard
Set PPTP Client
My IP
0.0.0.0
Subnet Mask
0.0.0.0
GateWay
0.0.0.0
Server IP
0.0.0.0
PPTP Account
PPTP Password
Retype Password
< Back
Next >
Exit

**Step 5: Set Wireless LAN connection**

Click “**enable**” to enable wireless LAN. If user enables the wireless LAN, type the SSID in the text box and select a communications channel. The SSID and channel must be the same as wireless devices attempting communication to the router.




**Step 6: Restart**

The Setup wizard is now completed. The new settings will be effective after the Wireless router restarted. Please click “**Restart**” to reboot the router. If user does not want to make any changes, please click “**exit**” to quit without any changes. User also can go back to modify the setting by clicking “**Back**”.

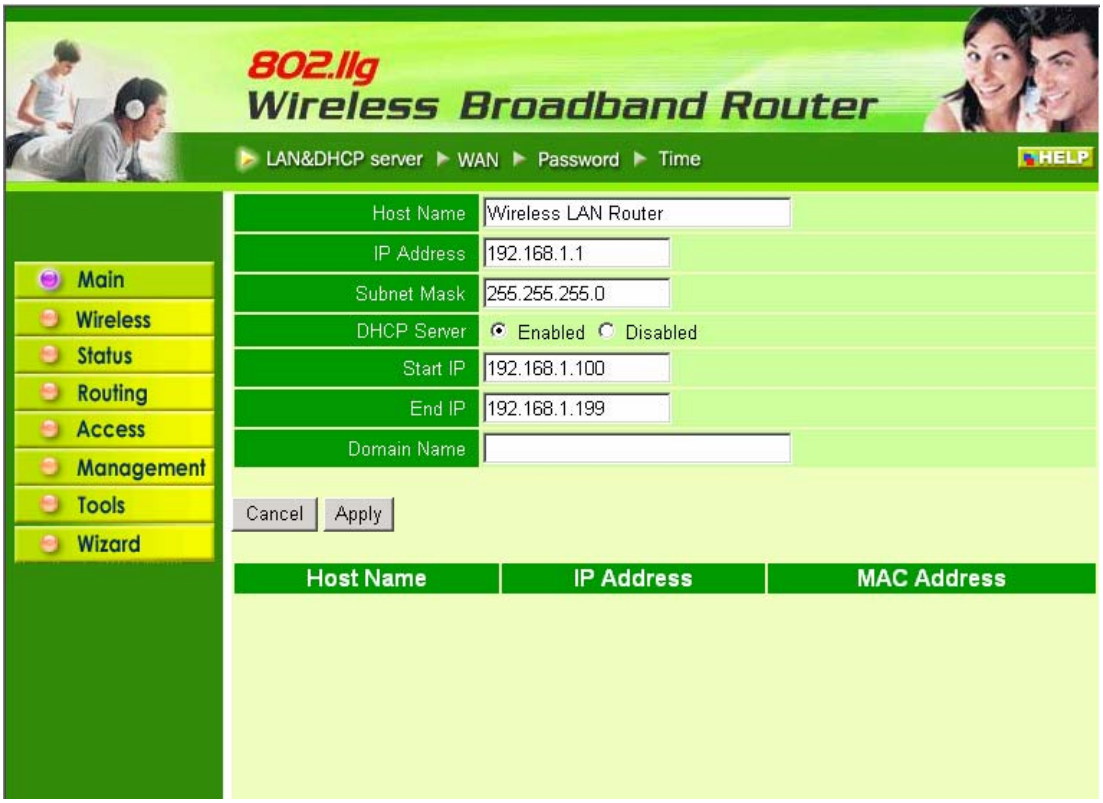
# 7. Configuration Wireless Router through WEB Browser

## 7.1 LAN Setting

The screen leads to configure the LAN & DHCP Server, set WAN parameters, create Administrator and User passwords, and set the local time, time zone, and dynamic DNS.

### 7.1.1 LAN & DHCP Server

This page enables to set LAN and DHCP properties, such as the host name, IP address, subnet mask, and domain name. LAN and DHCP profiles are listed in the DHCP table at the bottom of the screen.




**Host Name:** Type the host name in the text box. The host name is required by some ISPs. The default host name is "AP-Router."

**IP Address:** This is the IP address of the router. The default IP address is 192.168.1.1.

**Subnet Mask:** Type the subnet mask for the router in the text box. The default subnet mask is 255.255.255.0.

**DHCP Server:** Enables the DHCP server to allow the router to automatically assign IP addresses to devices connecting to the LAN. DHCP is enabled by default.

All DHCP client computers are listed in the table at the bottom of the screen, providing the host name, IP address, and MAC address of the client.

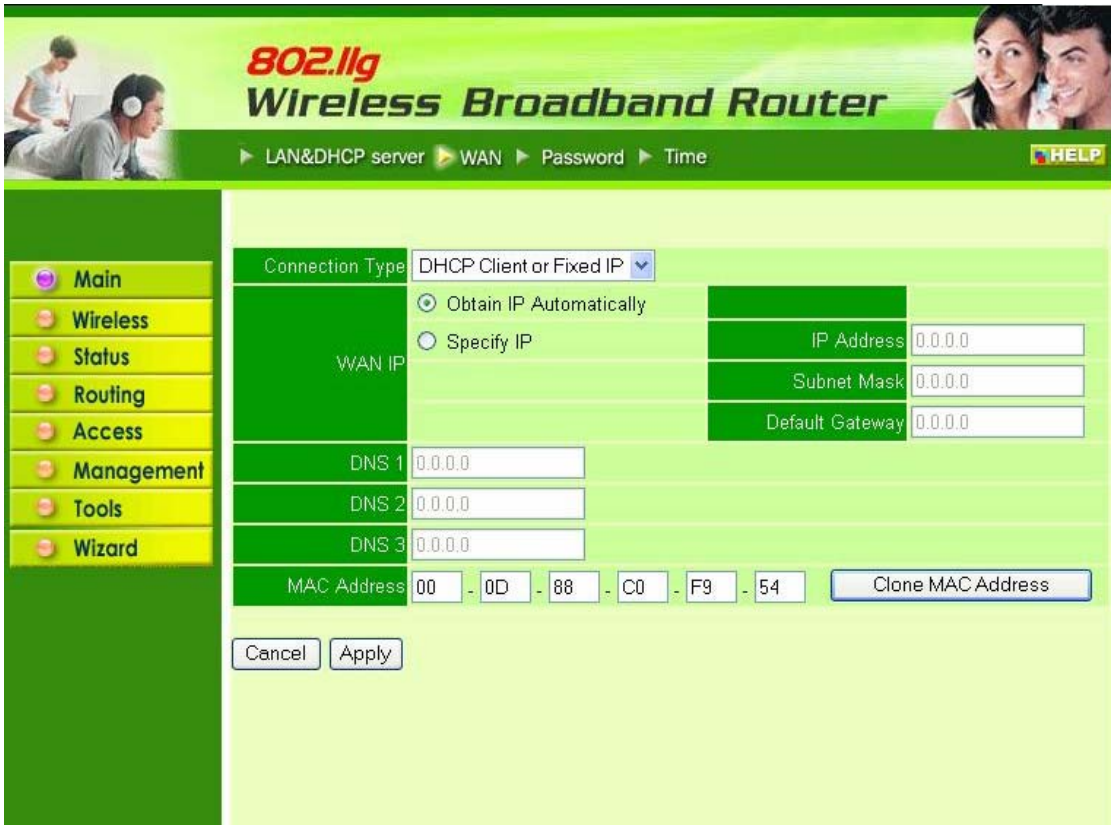
**Start IP:** Type an IP address to serve as the start of the IP range that DHCP will use to assign IP addresses to all LAN devices connected to the router.

**End IP:** Type an IP address to serve as the end of the IP range that DHCP will use to assign IP addresses to all LAN devices connected to the router.

**Domain Name:** Type the local domain name of the network in the text box. This item is optional.

## 7.1.2 WAN

This screen leads to set up the router WAN connection, specify the IP address for the WAN, add DNS numbers, and enter the MAC address.



**Connection Type:** Select the connection type, either DHCP client, Fixed IP or PPPoE from the drop-down list.

**WAN IP:** Select whether to specify an IP address manually, or DHCP to obtain an IP address automatically. When "**Specify IP**" is selected, type the IP address, subnet mask, and default gateway in the text boxes. ISP will provide this information.

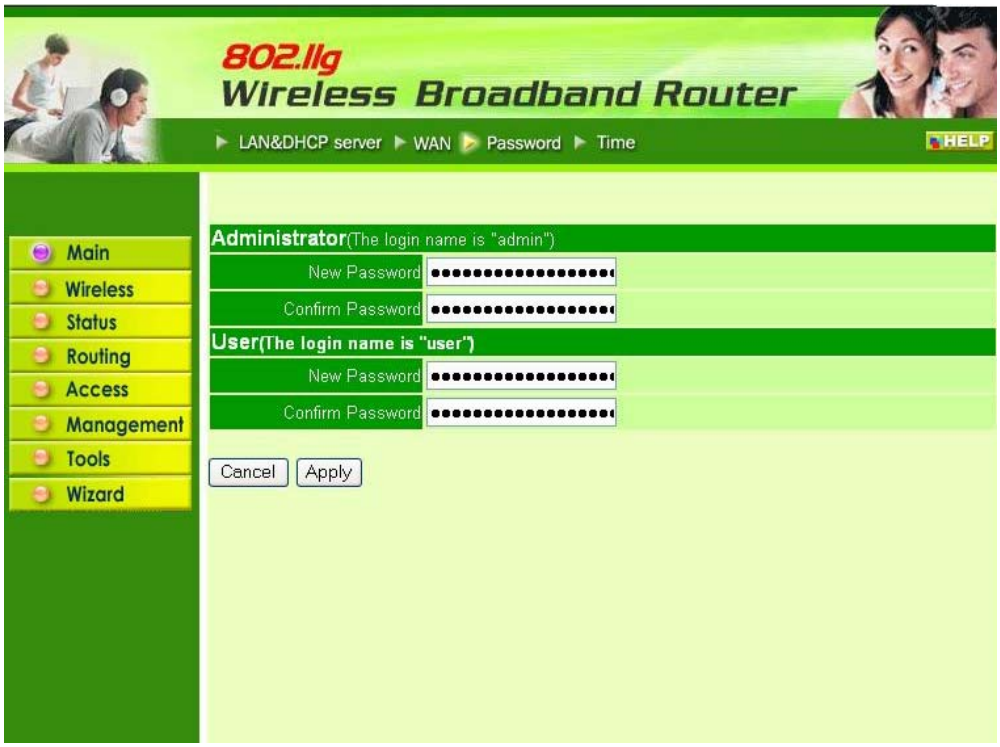
**DNS 1/2/3:** Type up to three DNS numbers in the text boxes. ISP will provide this information.

**MAC Address:** If required by ISP, type the MAC address of the router WAN interface in this field.

**DNS 1/2/3:** Type up to three DNS numbers in the text boxes. ISP will provide this information.

### 7.1.3 Password

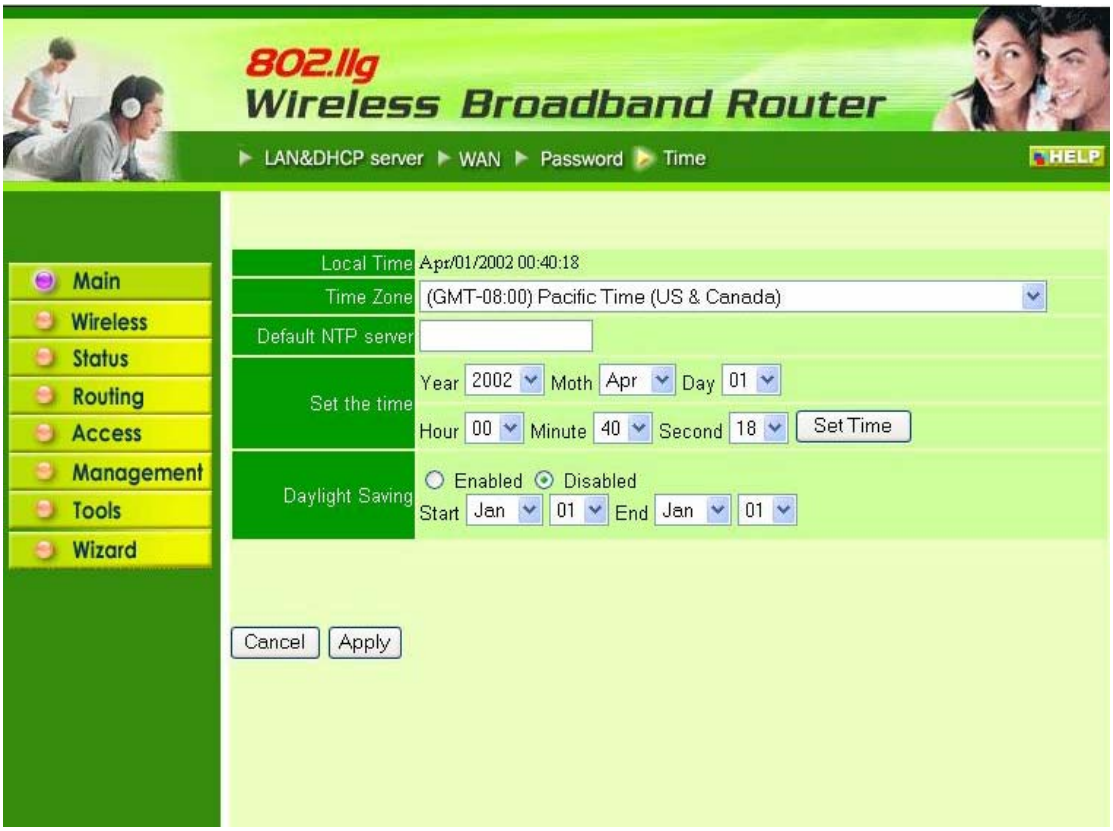
This screen leads to set administrative and user passwords. These passwords are used to gain access to the router interface.




**Administrator:** Type the password the Administrator will use to log in to the system. The password must be typed again for confirmation.

### 7.1.4 Time

This screen leads to set the time and date for the router's real-time clock, select properly time zone, and enable or disable daylight saving.



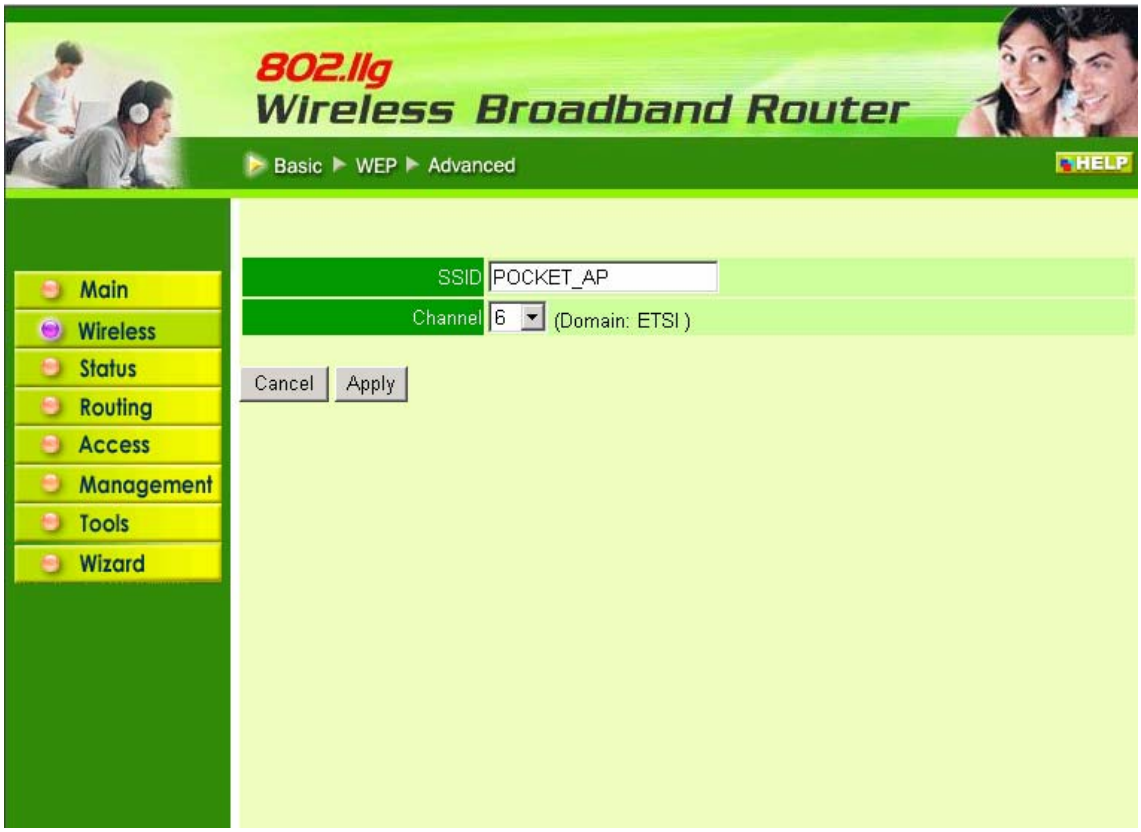

**Local Time:** Displays the local time and date.
**Time Zone:** Select properly time zone from the drop-down list.
**Daylight Saving:** Enable or disable daylight saving time. When enabled, select the start and end date for daylight saving time.

## 7.2 Wireless

This section leads to set wireless communications parameters for the router's wireless LAN feature.

### 7.2.1 Basic

This page allow to enable and disable the wireless LAN function, create a SSID, and select the channel for wireless communications.

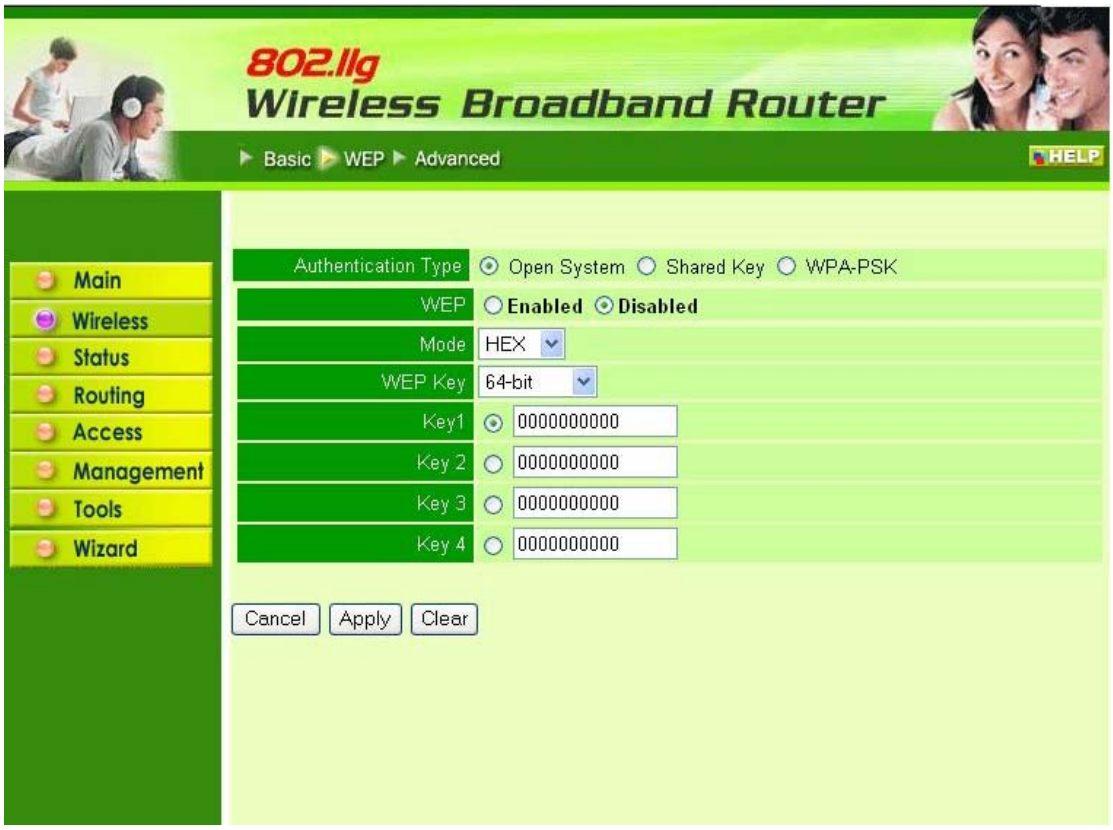



**SSID:** Type an SSID in the text box. The SSID of any wireless device must match the SSID typed here in order for the wireless device to access the LAN and WAN via the router.

**Channel:** Select a transmission channel for wireless communications. The channel of any wireless device must match the channel selected here in order for the wireless device to access the LAN and WAN via the router.

### 7.2.2 WEP

This screen leads to set authentication type for secure wireless communications. Open System allows public access to the router via wireless communications. Shared Key requires the user to set a WEP key to exchange data with other wireless clients that have the same WEP key. This router also supports WPA-PSK.




**Authentication Type:** The authentication type default is set to open system. There are three options: Open System; Shared Key and WPA-PKS.

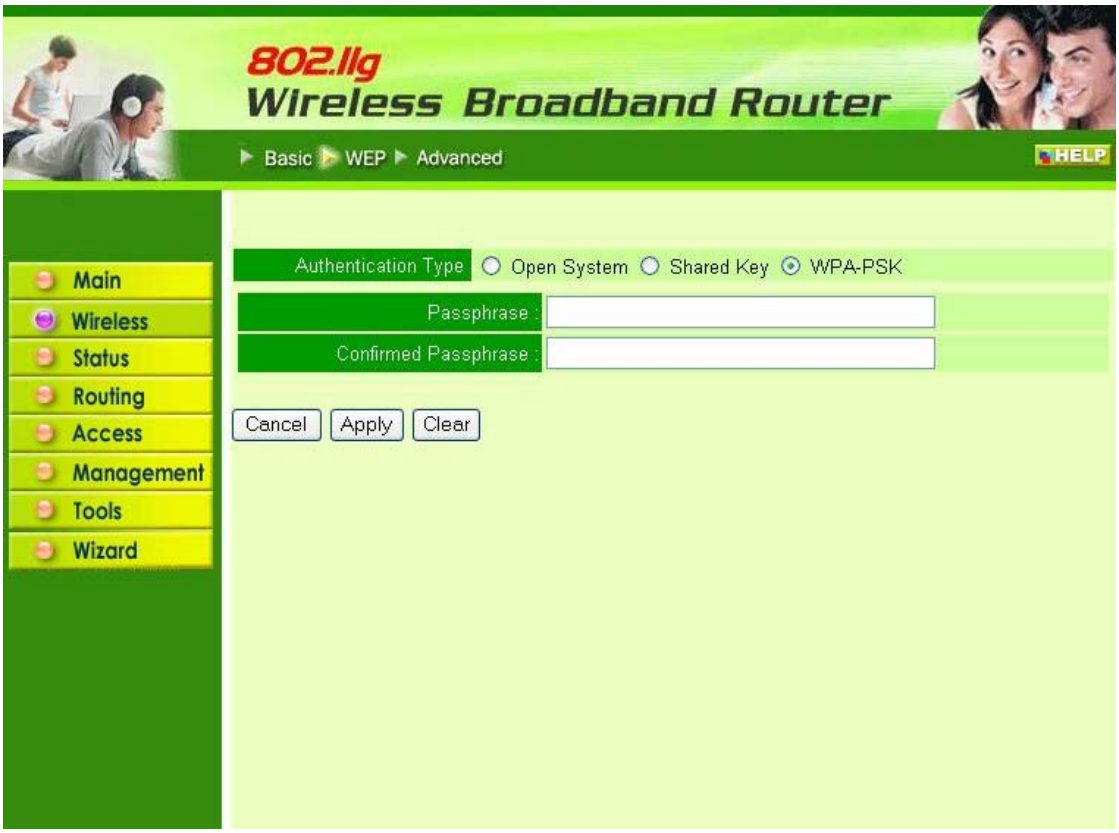
**WEP:** Enable or Disabled. This is to make WEP enabled or disabled.

**Mode:** Select the key mode in ASCII or HEX

**WEP Key:** Select the level of encryption from the drop-down list. The router supports, 64- and 128-bit encryption.

**Key 1 ~ Key 4:** Create an encryption scheme for Wireless LAN transmissions. Manually enter a set of values for each key. Select which key user wants to use by clicking the radio button next to the key. Click "**Clear"** to erase key values. Click "**Apply**" button for the changes to be effective.

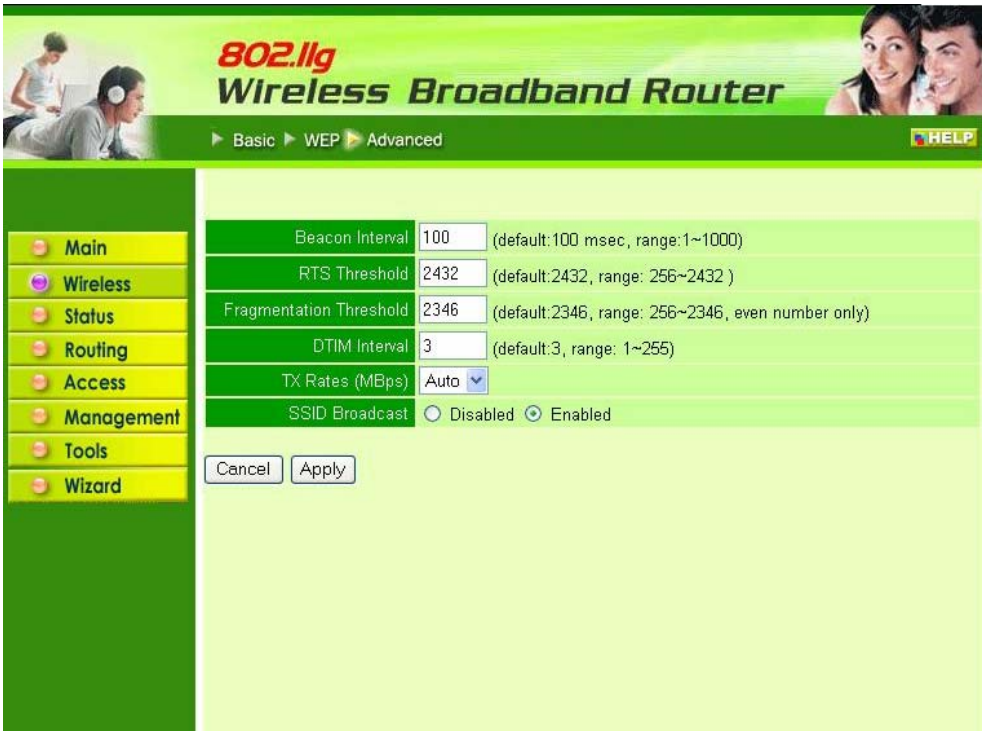
If **WPA-PSK** is selected, please set the PSK key in the pass phrase field. The length should be 8 characters at least.




**Note:** Once **WPA-PSK** function enables, it will take some time to make the setting active.

### 7.2.3 Advanced

This screen leads to configure advanced wireless functions.




**Beacon Interval:** Type the beacon interval in the text box. User can specify a value from 1 to 1000. The default beacon interval is 100.

**RTS Threshold:** Type the RTS (Request-To-Send) threshold in the text box. This value stabilizes data flow. If data flow is irregular, choose values between 256 and 2432 until data flow is normalized.

**Fragmentation Threshold:** Type the fragmentation threshold in the text box. If packet transfer error rates are high, choose values between 256 and 2432 until packet transfer rates are minimized. (**NOTE:** *set this fragmentation threshold value may diminish system performance*.)

**DTIM Interval:** Type a DTIM (Delivery Traffic Indication Message) interval in the text box. User can specify a value between 1 and 65535. The default value is 3.

**TX Rates (MBps):** Select one of the wireless communications transfer rates, measured in megabytes per second, based upon the speed of wireless adapters connected to the WLAN.

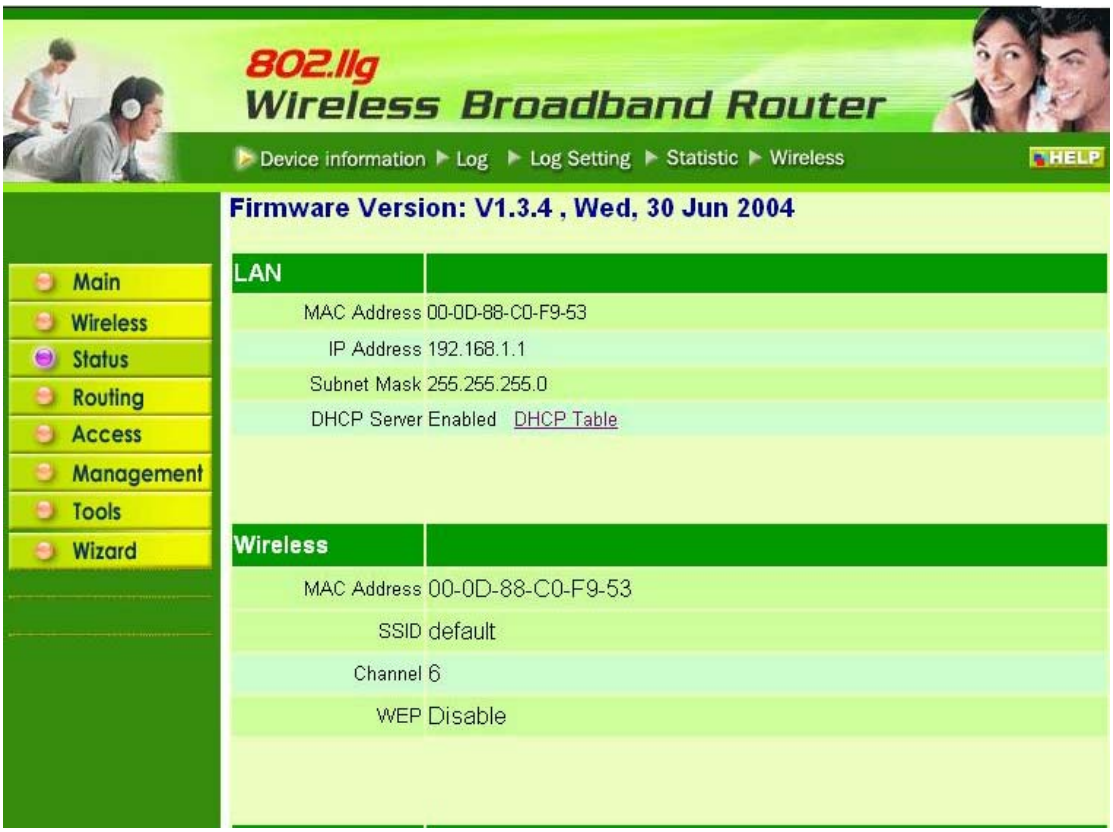
**SSID Broadcast:** While SSID Broadcast is enabled, all wireless clients will be able to communicate with the access point. For secure purpose, user may want to disable SSID broadcast to allow only those wireless clients with the AP SSID to communicate with the access point

## 7.3 Status

This selection leads to view the status of the router LAN, WAN connections, and view logs and statistics pertaining to connections and packet transfers.

### 7.3.1 Device Information

This screen leads to view the router LAN, Wireless and WAN configuration.



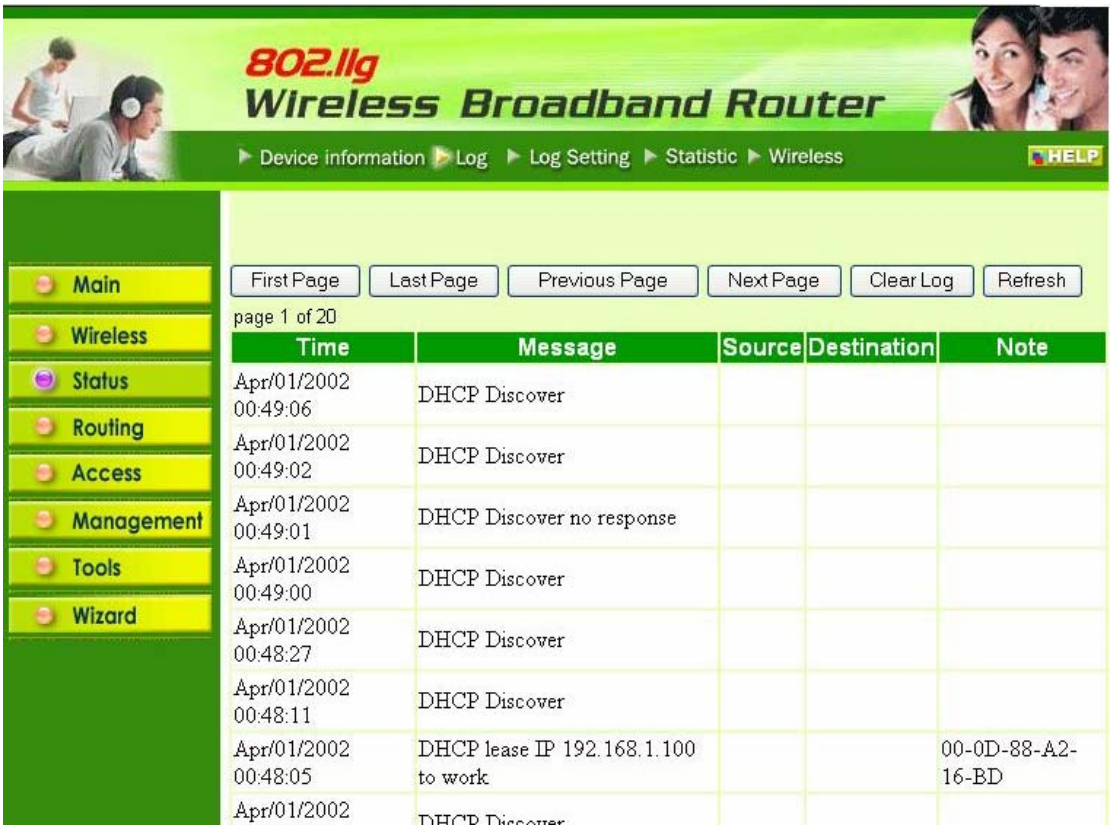

**Firmware Version:** Displays the latest build of the router firmware interface. After updating the firmware in Tools - Firmware, check this to ensure that firmware was successfully updated.

**LAN:** This field displays the router's LAN interface MAC address, IP address, subnet mask, and DHCP server status. Click "**DHCP Table**" to view a list of client stations currently connected to the router LAN interface.

**Wireless:** Displays the router's wireless connection information, including the router's wireless interface MAC address, the connection status, the SSID status, which channel is being used, and whether WEP is enabled or not.

### 7.3.2 Log

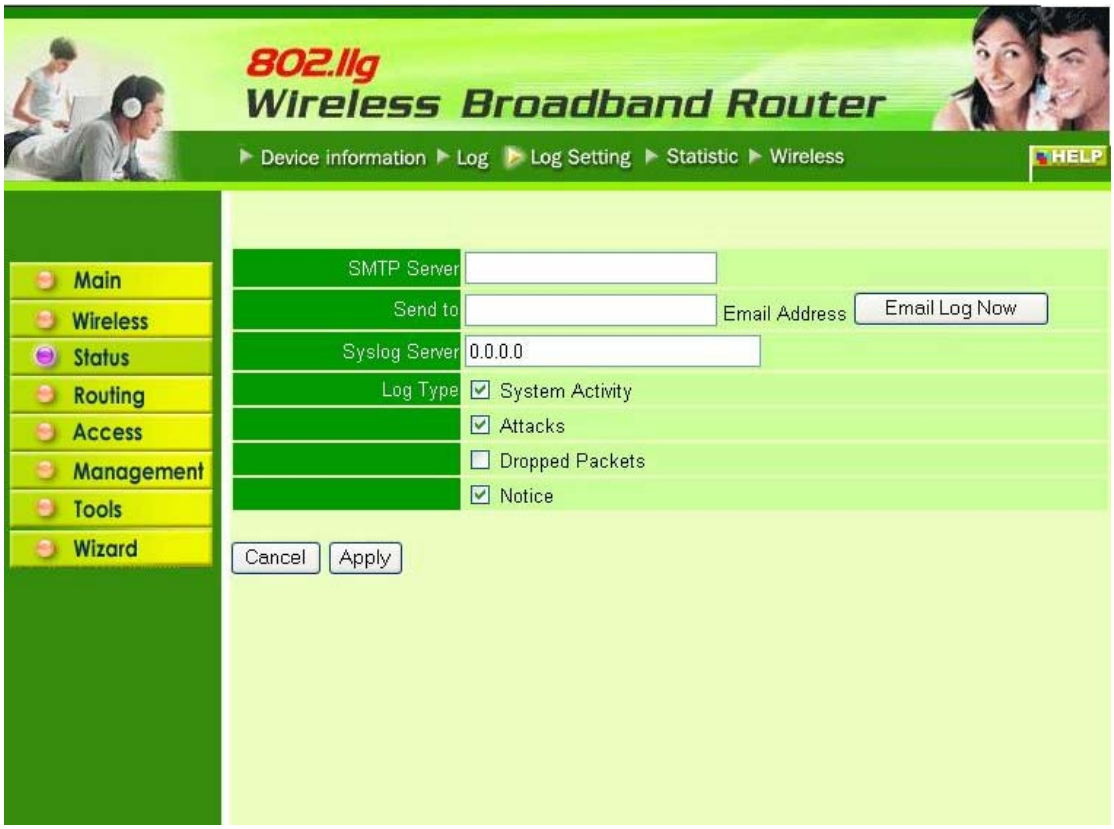
This screen leads to view a running log of router system statistics, events, and activities. The log displays up to 200 entries. Older entries are overwritten by new entries. The Log screen commands are as follows:
Click "**First Page**" to view the first page of the log
Click "**Last Page**" to view the final page of the log
Click "**Previous Page**" to view the page just before the current page
Click "**Next Page**" to view the page just after the current page
Click "**Clear Log**" to delete the contents of the log and begin a new log
Click "**Refresh**" to renew log statistics




**Time:** Displays the time and date that the log entry was created.
**Message:** Displays summary information about the log entry.
**Source:** Displays the source of the communication.
**Destination:** Displays the destination of the communication.
**Note:** Displays the IP address of the communication

### 7.3.3 Log Setting

This screen leads to set router logging parameters.




**SMTP Server:** Type the SMTP server address for the email that the log will be sent to in the next field.

**Send to:** Type an email address for the log to be sent to. Click "**Email Log Now**" to immediately send the current log.

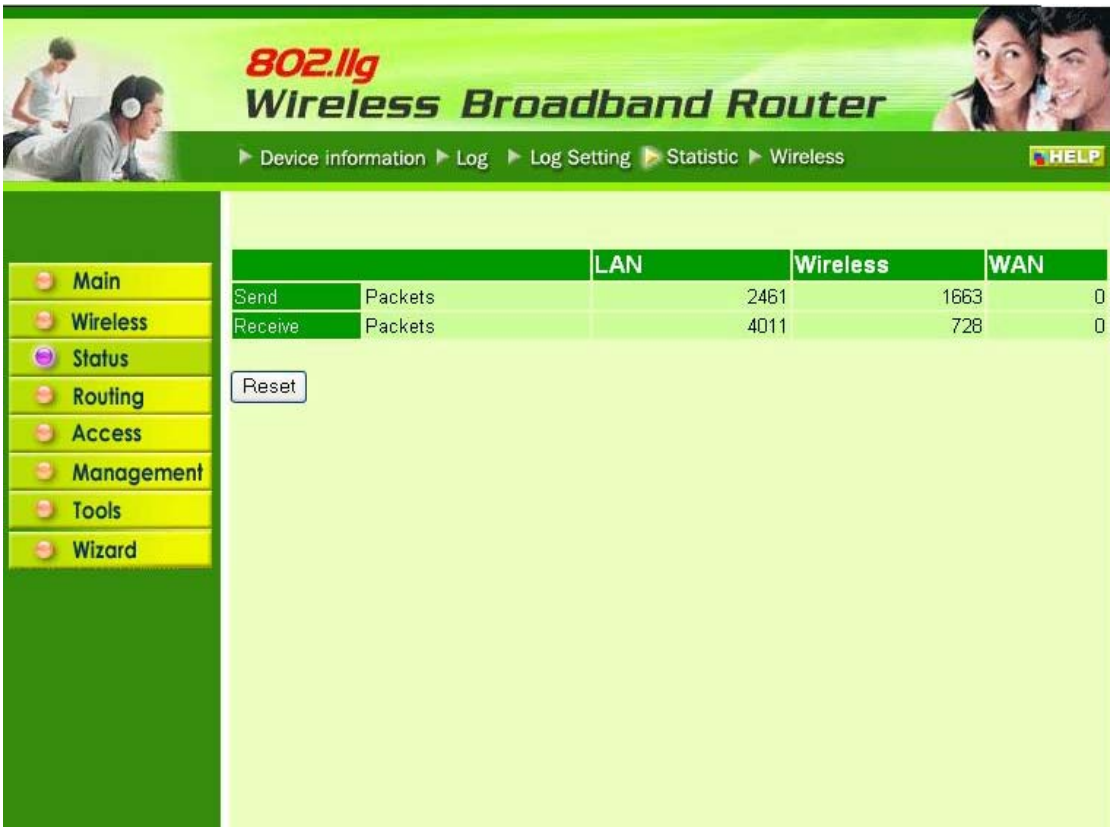
**Syslog Server:** Type the IP address of the Syslog Server if user wants the router to listen and receive incoming Syslog messages.

**Log Type:** Select what items will be included in the log:

- **System Activity:** Displays information related to router operation.
- **Debug Information:** Displays information related to errors and system malfunction.
- **Attacks:** Displays information about any malicious activity on the network.
- **Dropped Packets:** Displays information about packets that have not been transferred successfully.
- **Notice:** Displays important notices by the system administrator.

### 7.3.4 Statistic

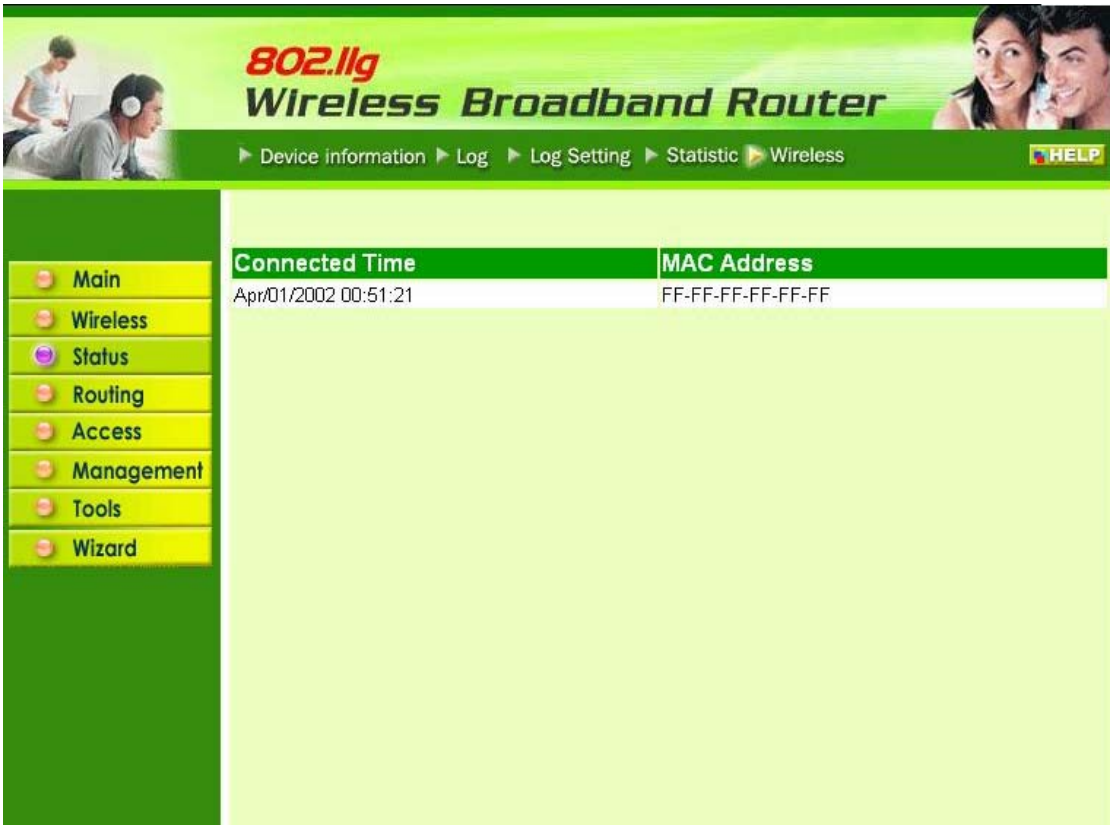
This screen displays a table that shows the rate of packet transmission via the router LAN and WAN ports (in bytes per second).




Click "**Reset**" to erase all statistics and begin logging statistics again.

### 7.3.5 Wireless

This screen leads to view information about wireless devices that are connected to the wireless router.




**Connected Time:** How long the wireless device has been connected to the LAN via the router?

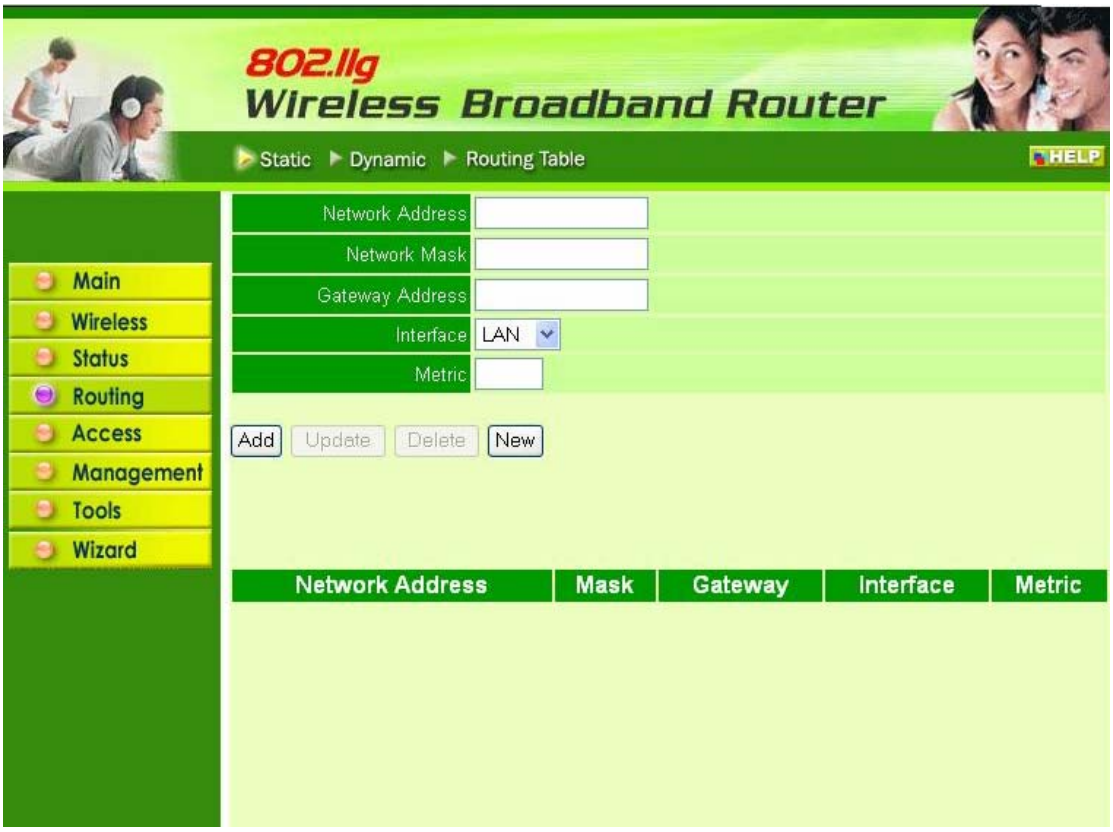
**MAC Address:** Displays the devices wireless LAN interface MAC address.

## 7.4 Routing

This selection leads to set how the router forwards data: Static and Dynamic. Routing Table enables user to view the information created by the router that displays the network interconnection topology.

### 7.4.1 Static

It enables user to set parameters by which the router forwards data to its destination if network has a static IP address.

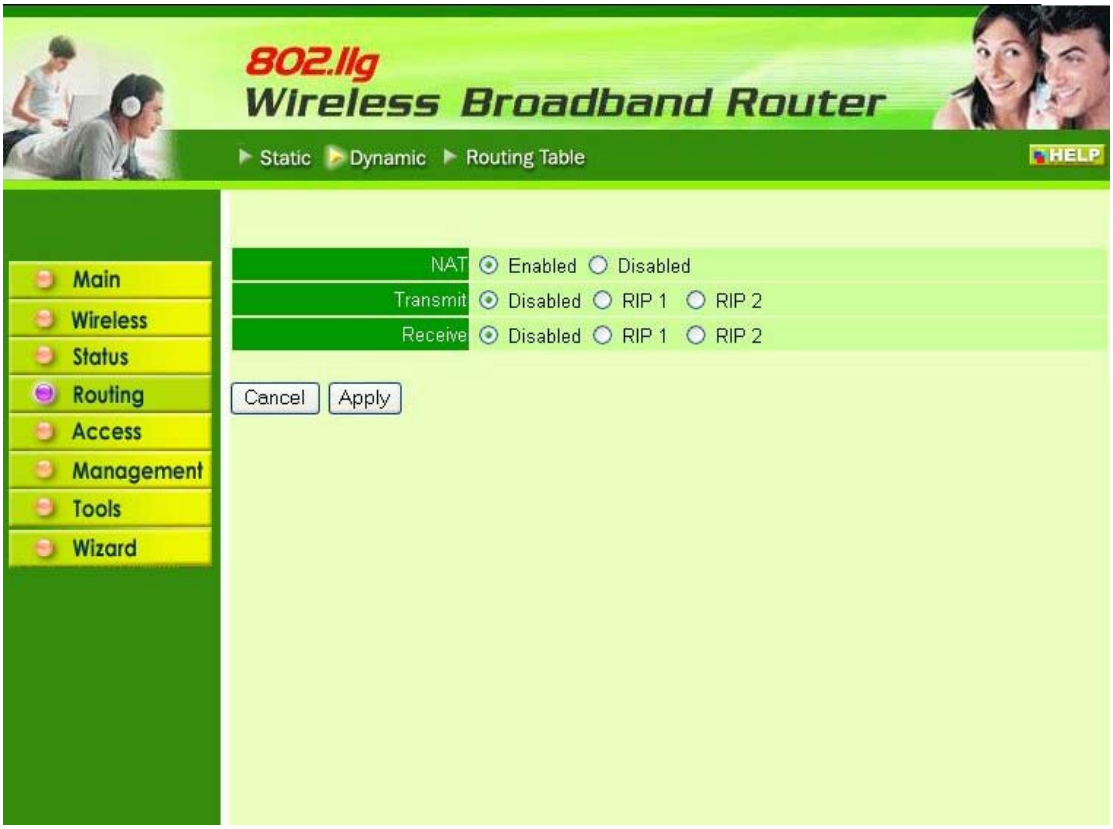



**Network Address:** Type the static IP address which network uses to access the Internet. ISP or network administrator provides this information.
**Network Mask:** Type the network (subnet) mask for network. If user does not type a value here, the network mask defaults to 255.255.255.255. ISP or network administrator provides this information.
**Gateway Address:** Type the gateway address for network. ISP or network administrator provides this information.
**Interface:** Select which interface, WAN or LAN, used to connect to the Internet.
**Metric:** Select which metric to apply to this configuration.

**Add:** Click to add the configuration to the static IP address table at the bottom of the page.
**Update:** Select one of the entries in the static IP address table at the bottom of the page and, after changing parameters, click "**Update**" to confirm the changes.
**Delete:** Select one of the entries in the static IP address table at the bottom of the page and click "**Delete**" to remove the entry.
**New:** Click "**New**" to clear the text boxes and add required information to create a new entry.

### 7.4.2 Dynamic

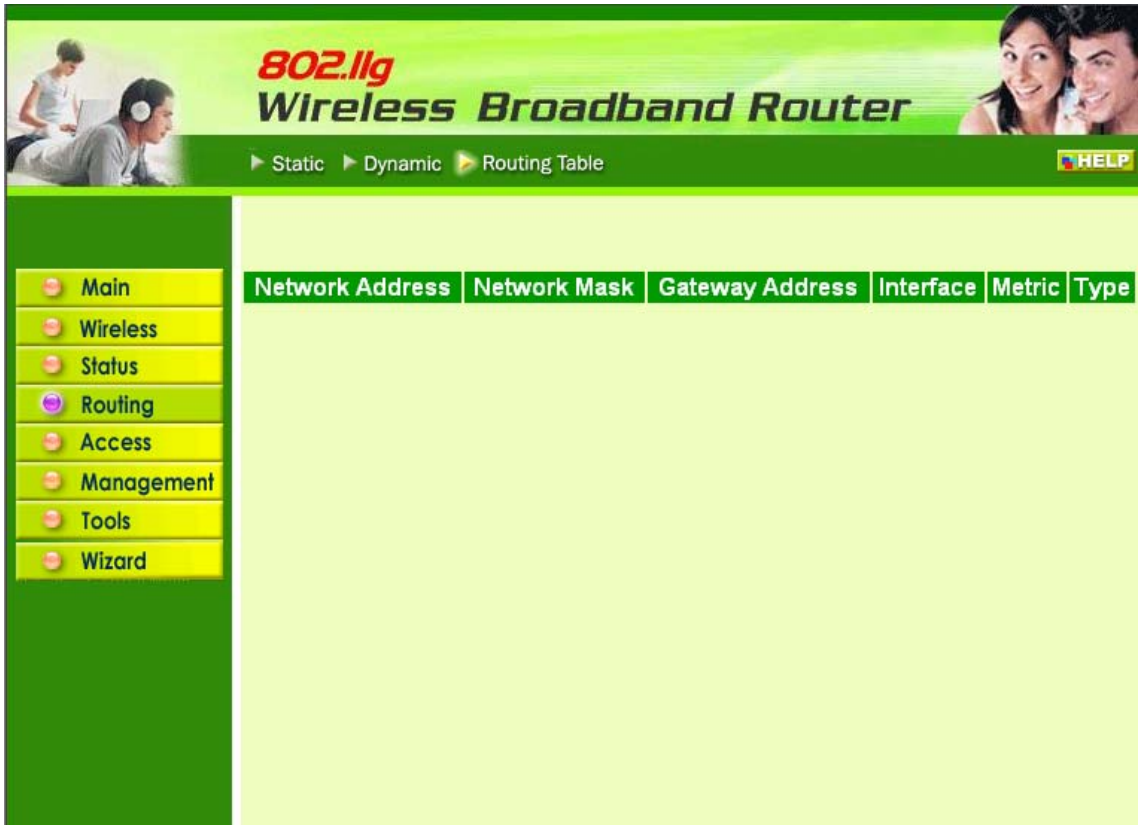
This screen leads to set NAT parameters.




**NAT:** Click the radio buttons to enable or disable NAT.
**Transmit:** Click the radio buttons to set the desired transmit parameters, disabled, RIP 1, or RIP 2.
**Receive:** Click the radio buttons to set the desired transmit parameters, disabled, RIP 1, or RIP 2

### 7.4.3 Routing Table

This screen leads to view the routing table for the router. The routing table is a database created by the router that displays the network interconnection topology.



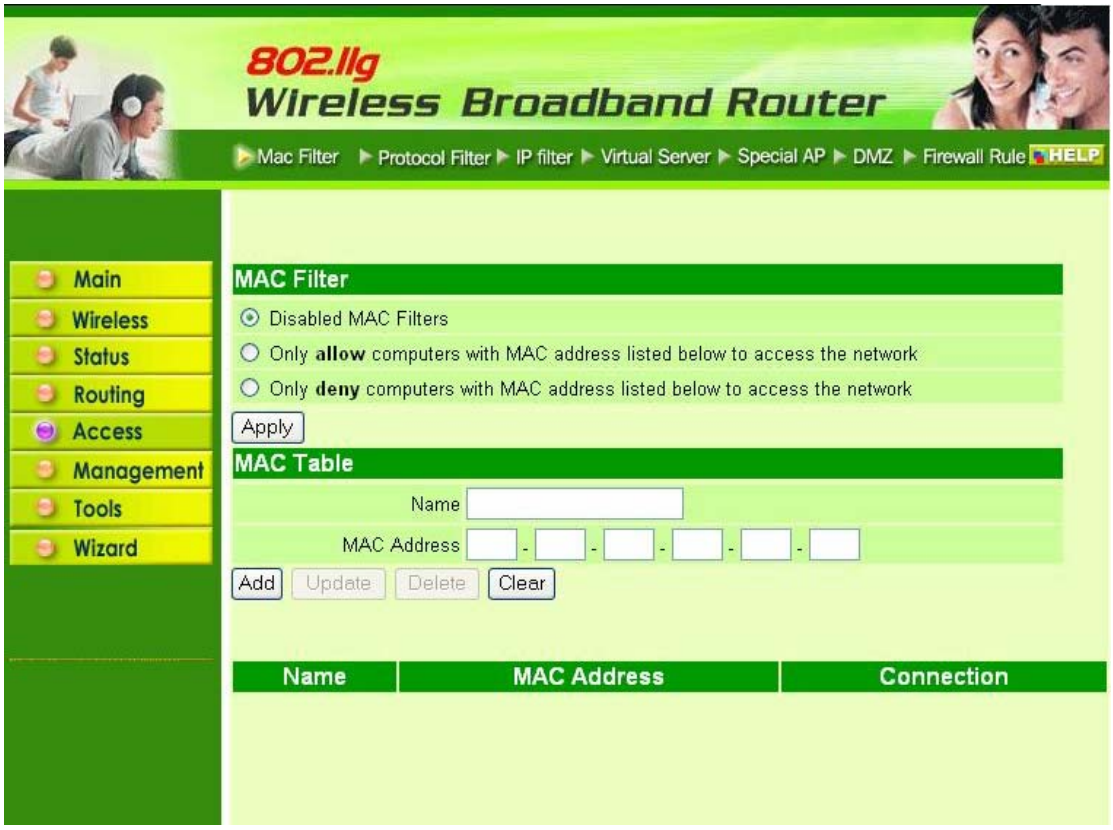

**Network Address:** Displays the network IP address of the connected node.
**Network Mask:** Displays the network (subnet) mask of the connected node.
**Gateway Address:** Displays the gateway address of the connected node.
**Interface:** Displays whether the node is connected via a WAN or LAN.
**Metric:** Displays the metric of the connected node.
**Type:** Displays whether the node has a static or dynamic IP address

## 7.5 Access

This page leads to define access restrictions, set up protocol and IP filters, create virtual servers, define access for special applications such as games, and set firewall rules.

### 7.5.1 MAC Filters

Allow or deny Internet access to users within the LAN based upon the MAC address of their network interface. Click the radio button next to "**Disabled**" to disable the MAC filter.




**Disable:** Once the function of MAC filter is disabled, those listed in the MAC Table are allowed Internet access.

**Enable:** All users are allowed Internet access except those users in the MAC Table are deny Internet access.

**MAC Table:** Use this section to create a user profile which Internet access is denied or allowed. The user profiles are listed in the table at the bottom of the page. (**Note***:* Click anywhere in the item. Once the line is selected, the fields automatically load the item's parameters, which user edited.)

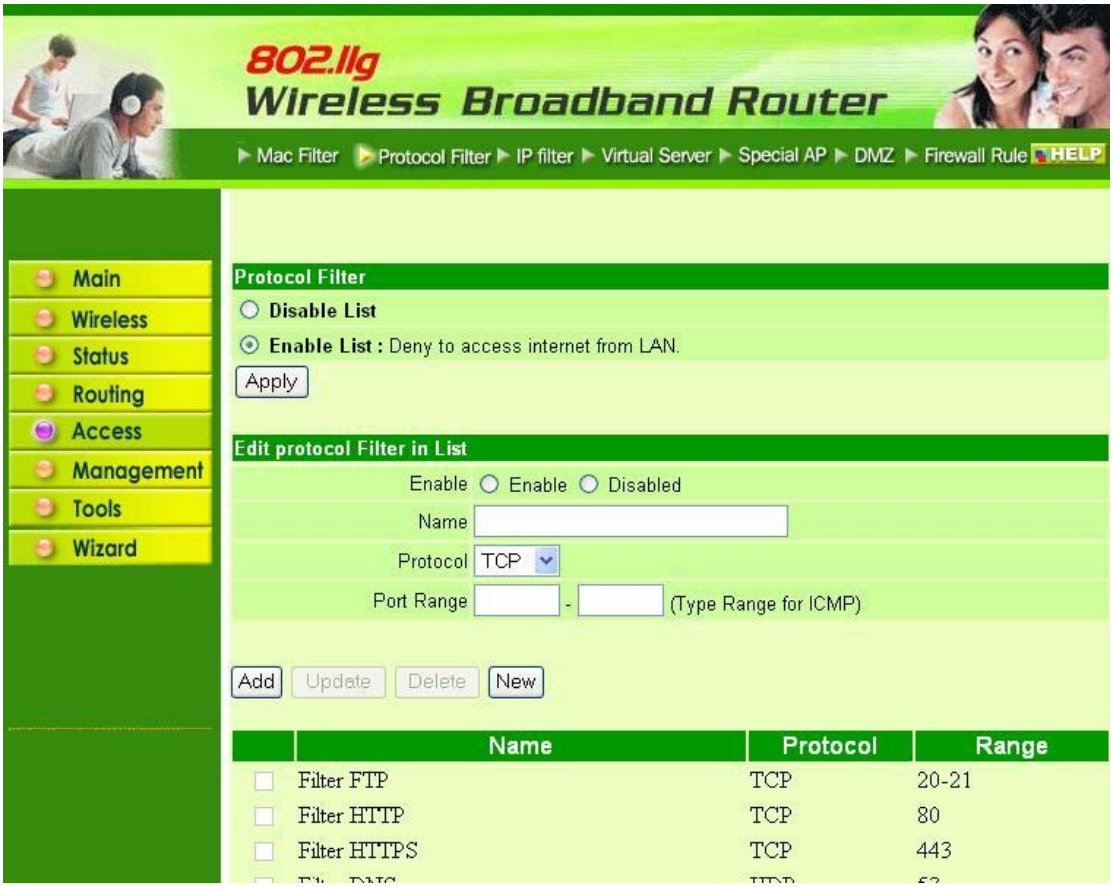
**Name:** Type the name of the user to be permitted/denied access.

**MAC Address:** Type the MAC address of the user's network interface.
**Add:** Click to add the user to the list at the bottom of the page.
**Update:** Click to update information for the user, if user has changed any of the fields.

**Delete:** Select a user from the table at the bottom of the list and click "**Delete**" to remove the user profile.
**New:** Click "**New**" to erase all fields and enter new information.

## 7.5.2 Protocol Filter

This screen leads to allow and deny access based upon a communications protocol list which has been created. The protocol filter profiles are listed in the table at the bottom of the page.
**Note:** When selecting items in the table at the bottom, click anywhere in the item. The line is selected, and the fields automatically load the item's parameters, which user edited:



### 7.5.3 IP Filter

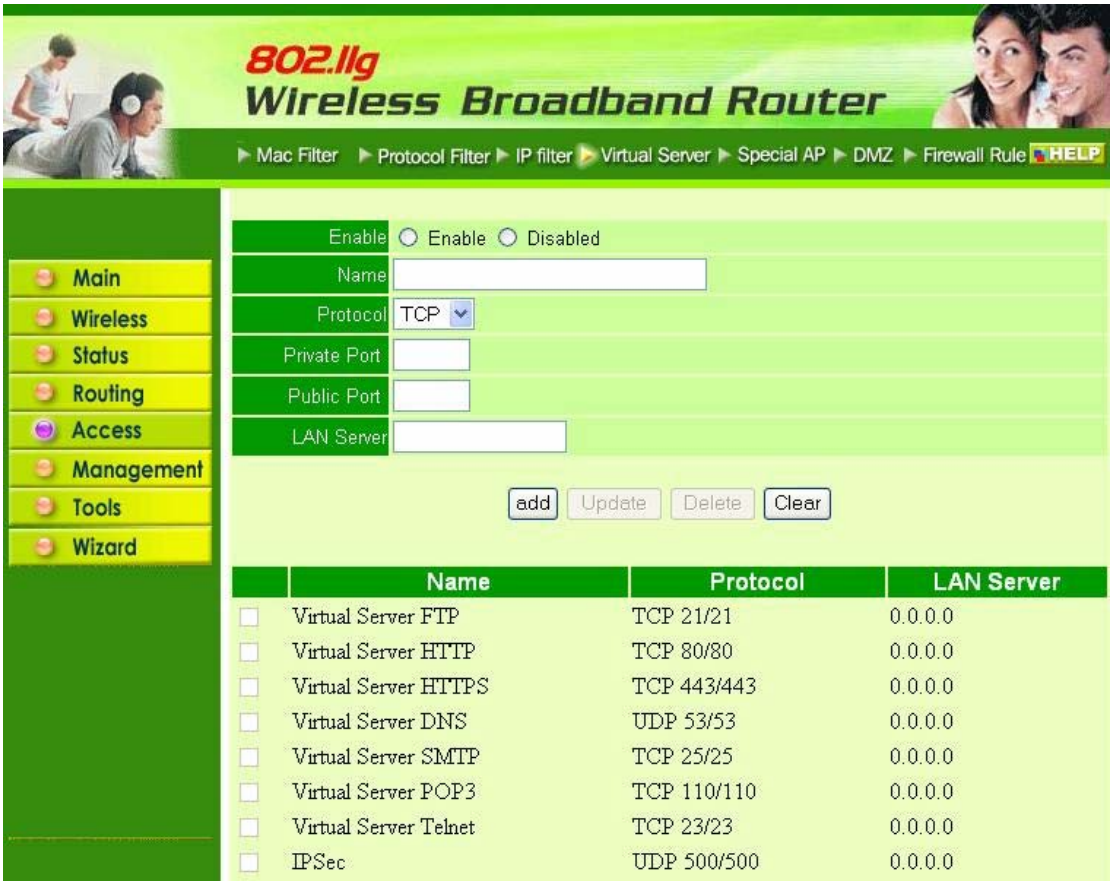
This screen leads to define a minimum and maximum IP address range filter; all IP addresses falling in the range are not allowed Internet access. The IP filter profiles are listed in the table at the bottom of the page. (**Note:** Click anywhere in the item. Once the line is selected, the fields automatically load the item's parameters, which user edited.)

**Enable:** Click to enable or disable the IP address filter.
**Range Start:** Type the minimum address for the IP range. IP addresses falling between this value and the Range End are not allowed to access the Internet.
**Range End:** Type the minimum address for the IP range. IP addresses falling between this value and the Range Start are not allowed to access the Internet.
**Add:** Click to add the IP range to the table at the bottom of the screen.
**Update:** Click to update information for the range if user has selected a list item and have made changes.
**Delete:** Select a list item and click **"Delete"** to remove the item from the list.
**New:** Click **"New"** to erase all fields and enter new information.

### 7.5.4 Virtual Server

This screen leads to create a virtual server via the router. If the router is set as a virtual server, remote users requesting Web or FTP services through the WAN are directed to local servers in the LAN. The router redirects the request via the protocol and port numbers to the correct LAN server. The Virtual Sever profiles are listed in the table at the bottom of the page.

**Note:** When selecting items in the table at the bottom, click anywhere in the item. The line is selected, and the fields automatically load the item's parameters, which user edited.




**Enable:** Click to enable or disable the virtual server.

**Name:** Type a descriptive name for the virtual server.

**Protocol:** Select the protocol (TCP or UDP) used for the virtual server.

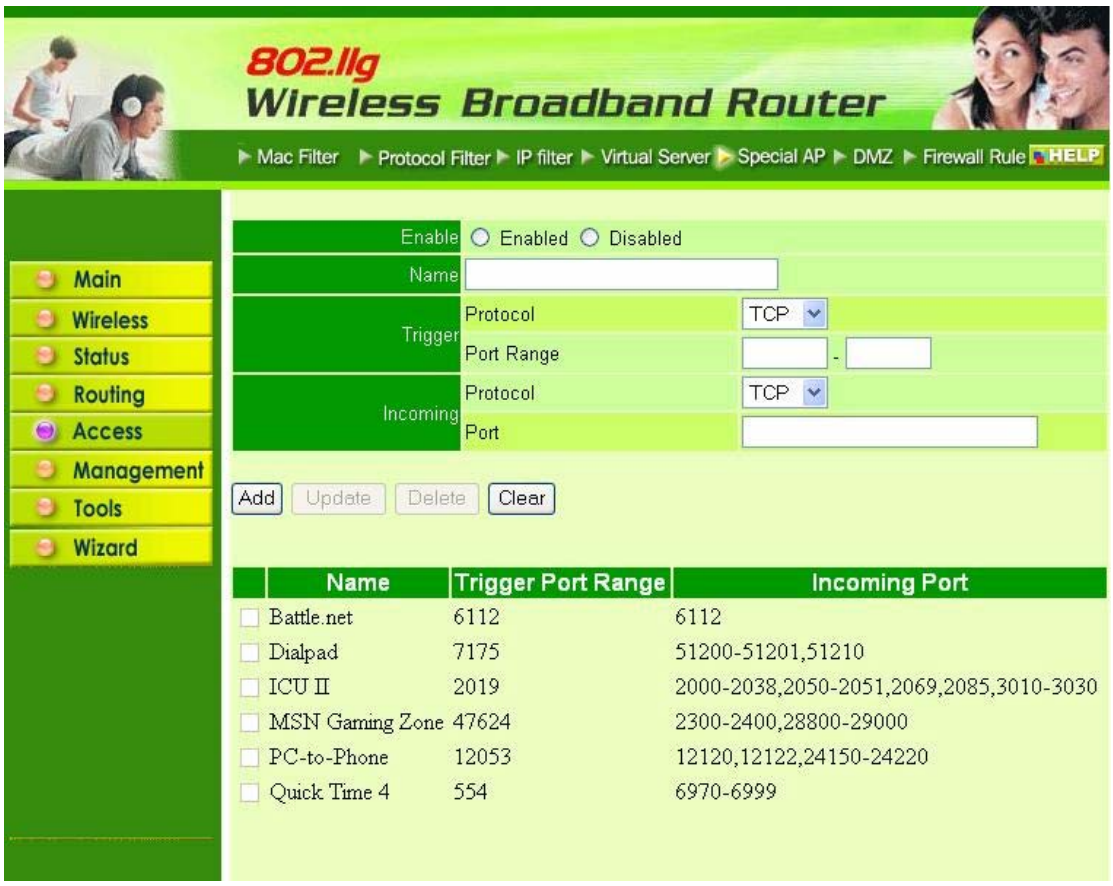
**Private Port:** Type the port number of the computer on the LAN that is being used to act as a virtual server.

**Public Port:** Type the port number on the WAN that will be used to provide access to the virtual server.

**LAN Server:** Type the LAN IP address that will be assigned to the virtual server.
**Add:** Click to add the virtual server to the table at the bottom of the screen.
**Update:** Click to update information for the virtual server if user has selected a list item and have made changes.
**Delete:** Select a list item and click **"Delete"** to remove the item from the list.
**New:** Click **"New"** to erase all fields and enter new information.

### 7.5.5 Special AP

This screen leads to specify special applications, such as games, that require multiple connections that are inhibited by NAT. The special applications profiles are listed in the table at the bottom of the page.
**Note:** When selecting items in the table at the bottom, click anywhere in the item. The line is selected, and the fields automatically load the item's parameters, which user edited.



**Enable:** Click to enable or disable the application profile. When enabled, users will be able to connect to the application via the router WAN connection. Click Disabled on a profile to prevent users from accessing the application on the WAN.

**Name:** Type a descriptive name for the application.

**Trigger:** Defines the outgoing communication that determines whether the user has legitimate access to the application.

- **Protocol:** Select the protocol (TCP, UDP, or ICMP) that can be used to access the application.
- **Port Range:** Type the port range that can be used to access the application in the text boxes.

**Incoming:** Defines which incoming communications users are permitted to connect with.

- **Protocol:** Select the protocol (TCP, UDP, or ICMP) that can be used by the incoming communication.
- **Port:** Type the port number that can be used for the incoming communication.

**Add:** Click to add the special application profile to the table at the bottom of the screen.

**Update:** Click to update information for the special application if user has selected a list item and have made changes.

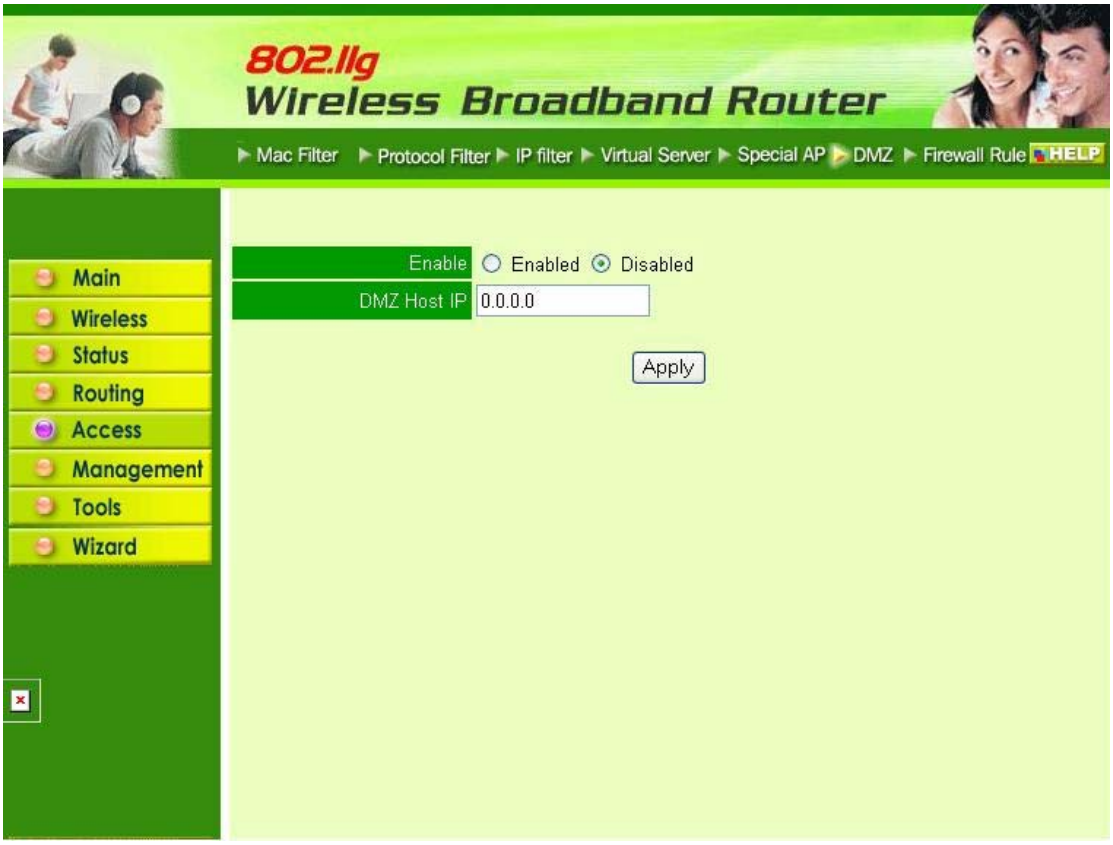
**Delete:** Select a list item and click **"Delete"** to remove the item from the list.

**New:** Click **"New"** to erase all fields and enter new information.

### 7.5.6 DMZ

This screen leads to create a DMZ for those computers that cannot access Internet applications properly through the router and associated security settings.

**Note:** Any clients added to the DMZ exposes the clients to security risks such as viruses and unauthorized access.



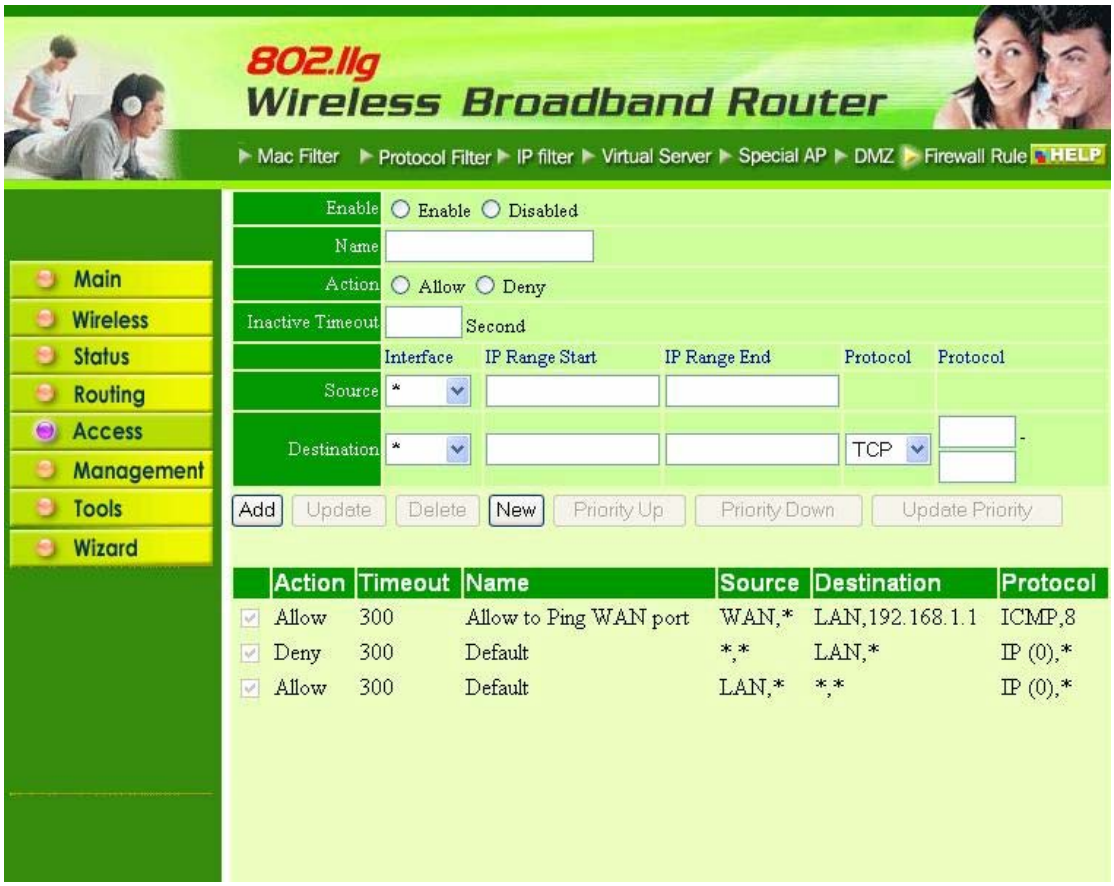

**Enable:** Click to enable or disable the DMZ.

**DMZ Host IP:** Type a host IP address for the DMZ. The computer with this IP address acts as a DMZ host with unlimited Internet access.

**Apply:** Click to save the settings.

## 7.5.7 Firewall Rule

This screen leads to set up the firewall. The router provides basic firewall functions, by filtering all the packets that enter the router using a set of rules. The rules are in an order sequence list--the lower the rule number, the higher the priority the rule has.




**Enable:** Click to enable or disable the firewall rule profile.
**Name:** Type a descriptive name for the firewall rule profile.
**Action:** Select whether to allow or deny packets that conform to the rule.
**Inactive Timeout:** Type the number of seconds of network inactivity that elapses before the router refuses the incoming packet.
**Source:** Defines the source of the incoming packet that the rule is applied to.

- **Interface:** Select which interface (WAN or LAN) the rule is applied to.
- **IP Range Start:** Type the start IP address that the rule is applied to.
- **IP Range End:** Type the end IP address that the rule is applied to.

**Destination:** Defines the destination of the incoming packet that the rule is applied to.

- **Interface:** Select which interface (WAN or LAN) the rule is applied to.
- **IP Range Start:** Type the start IP address that the rule is applied to.
- **IP Range End:** Type the end IP address that the rule is applied to.
- **Protocol:** Select the protocol (TCP, UDP, or ICMP) of the destination.
- **Port Range:** Select the port range.

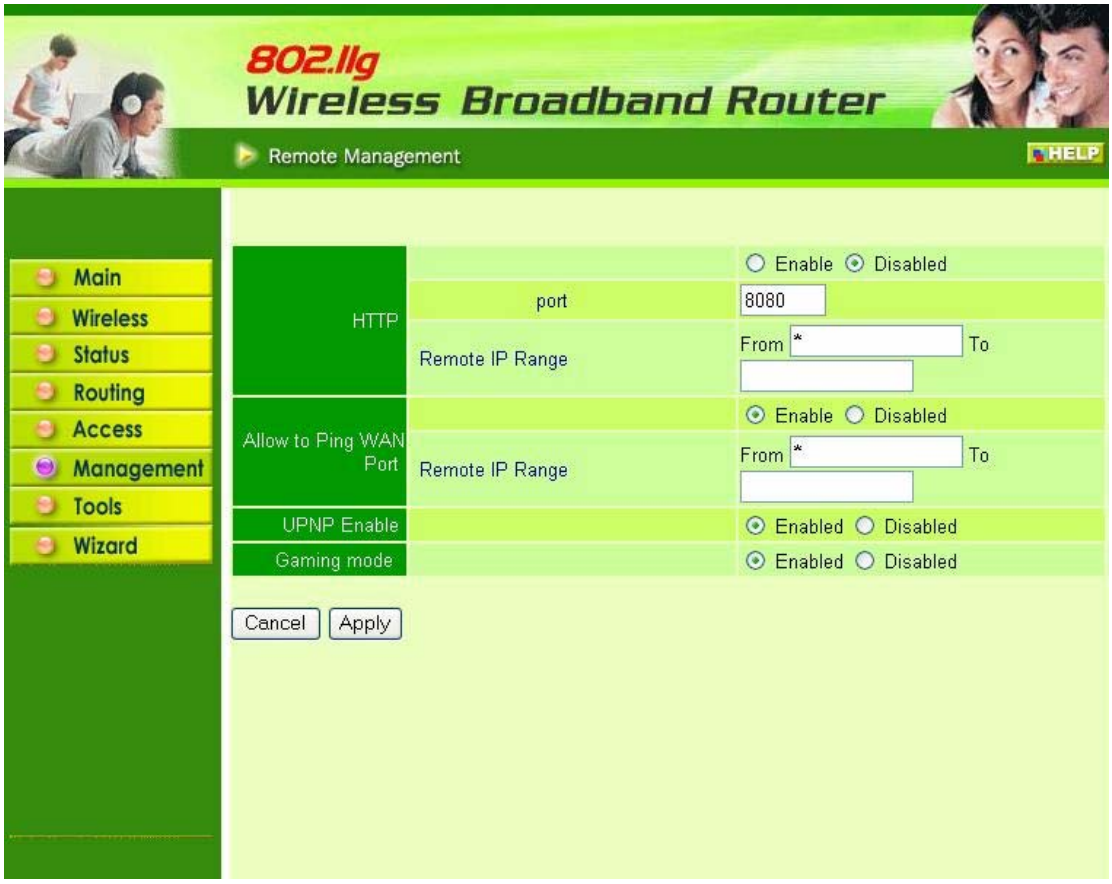
**Add:** Click to add the rule profile to the table at the bottom of the screen.
**Update:** Click to update information for the rule if user has selected a list item and have made changes.
**Delete:** Select a list item and click **"Delete"** to remove the item from the list.
**New:** Click **"New"** to erase all fields and enter new information.
**Priority Up:** Select a rule from the list and click **"Priority Up"** to increase the priority of the rule.
**Priority Down:** Select a rule from the list and click **"Priority Down"** to decrease the priority of the rule.
**Update Priority:** After increasing or decreasing the priority of a rule, click **"Update Priority"** to save the changes.

## 7.6 Management

Management leads to set up Remote Management feature.

### 7.6.1 Remote Management

This screen leads to set up remote management. Using remote management, the router can be configured through the WAN via a Web browser. A user name and password are required to perform remote management.




**HTTP:** Set up HTTP access for remote management.

**Allow to Ping WAN Port:** Type a range of router IP addresses that can be pinged from remote locations

**UPNP:** UPNP is short for Universal Plug and Play that is a networking architecture that provides compatibility among networking equipment, software, and peripherals. The Router is an UPnP enabled router and will only work with other UPnP devices/software. If user does not want to use the UPnP functionality, it can be disabled by selecting **"Disabled"**.

**GAMING MODE**: If user is experiencing difficulties when playing online games or even certain applications that use voice data, user may need to enable Gaming Mode for these applications to work correctly. When not playing games or using these voice applications, it is recommended that Gaming Mode is disabled.

## 7.7 Tools

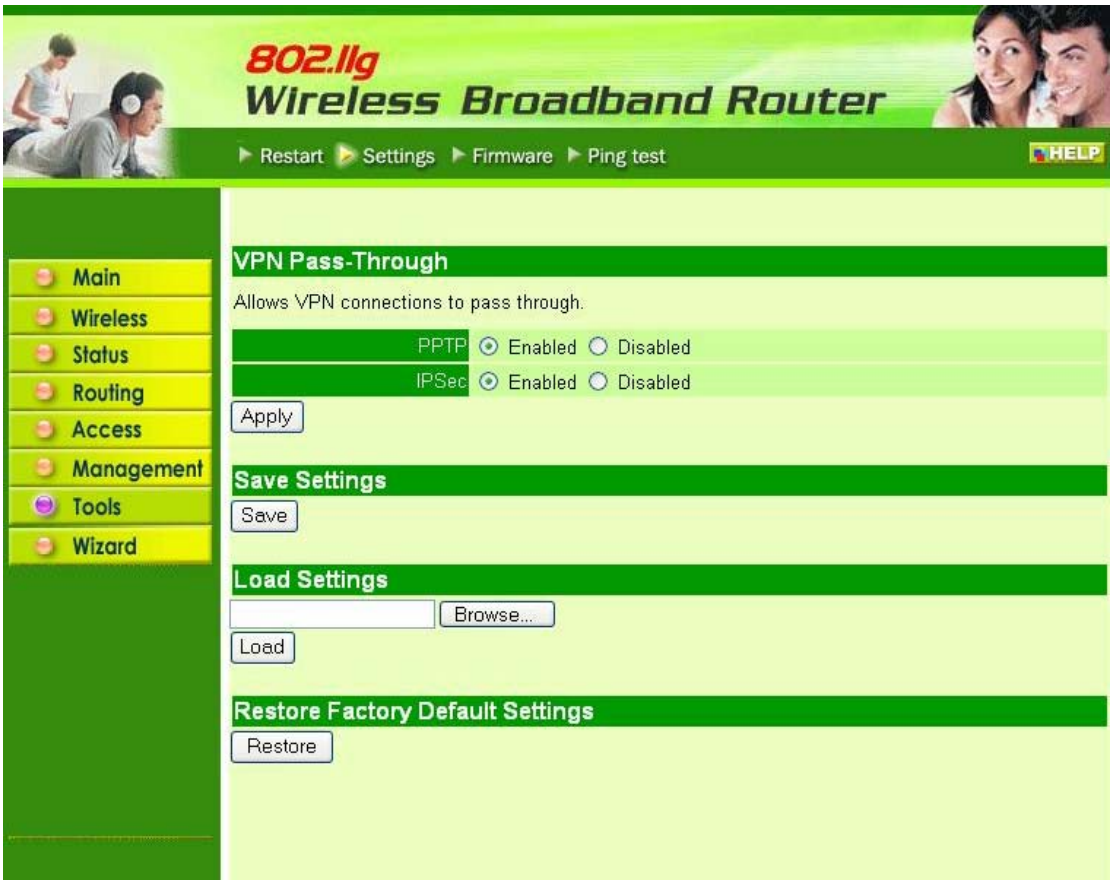
This page leads to restart the system, save and load different settings as profiles, restore factory default settings, run a setup wizard to configure router settings, upgrade the firmware, and ping remote IP addresses.

### 7.7.1 Restart

Click **"Restar"***t* to restart the system in the event the system is not performing correctly.

### 7.7.2 Settings

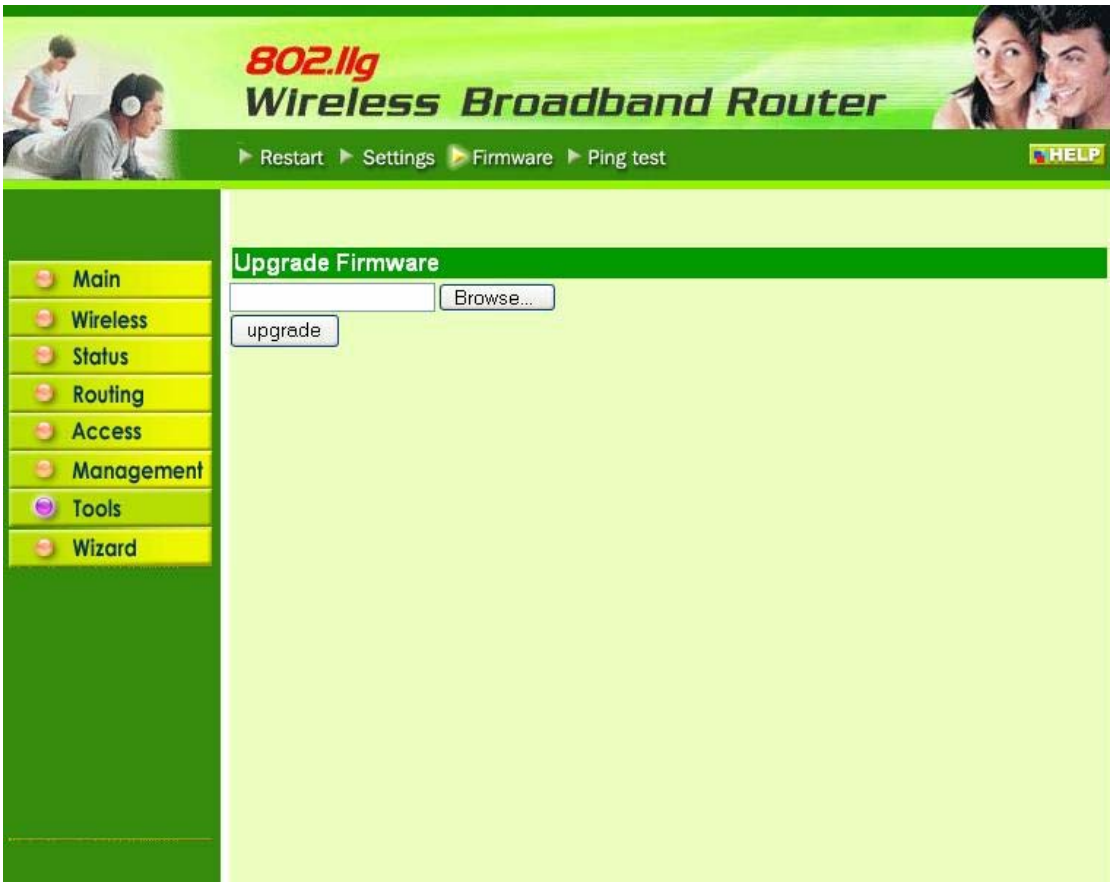
This screen leads to save settings as a profile and load profiles for different circumstances. User can also load the factory default settings, and run a setup wizard to configure the router and router interface.




**VPN Pass-Through:** Choose enable or disable on the PPTP or IPSec.
**Save Settings:** Click to save the current configuration as a profile that user can load when necessary.
**Load Settings:** Click **"Browse"** and go to the location of a stored profile. Click **"Load"** to load the profile's settings.
**Restore Factory Default Settings:** Click to restore the default settings. All configuration changes user has made will be lost.

### 7.7.3 Firmware

This screen leads to keep the router firmware up to date.

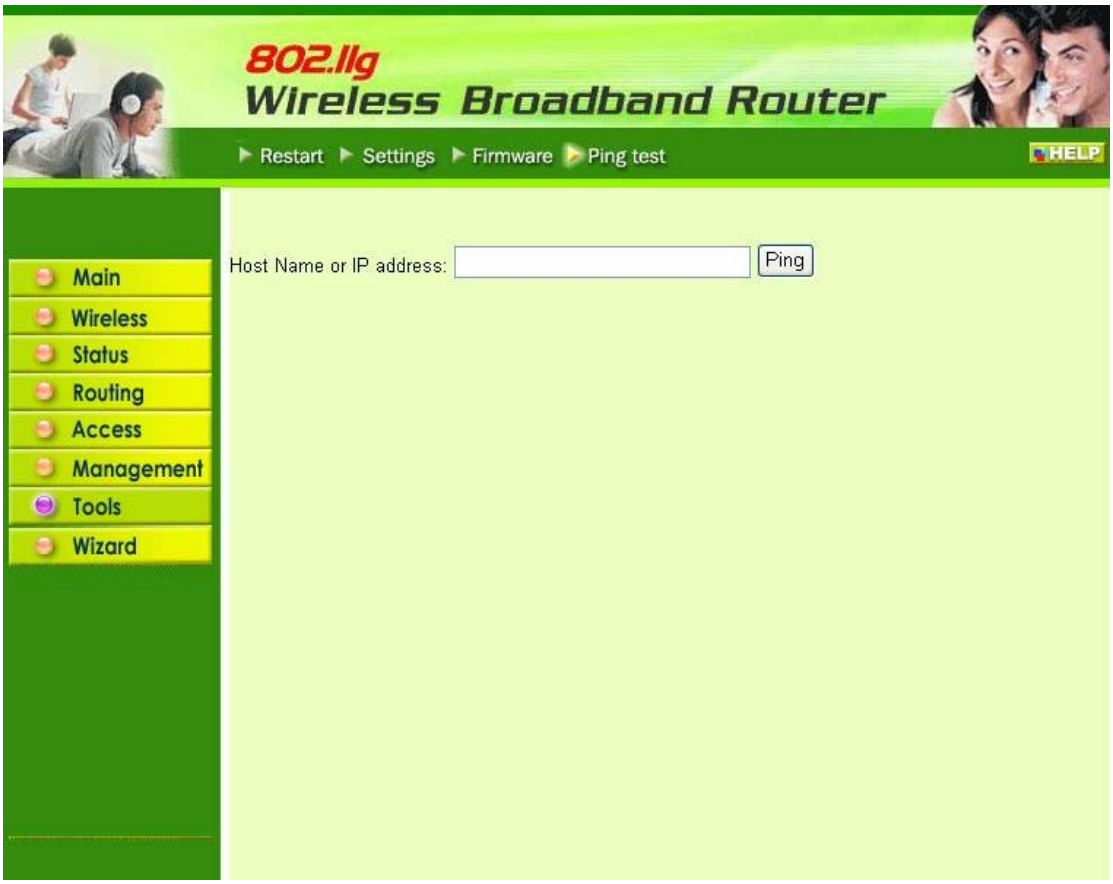



Please follow the below instructions:

1. Download the latest firmware from the manufacturer's Web site, and save it to disk.
2. Click **"Browse"** and go to the location of the downloaded firmware file. Select the file and click **"Upgrade"** to update the firmware to the latest release

### 7.7.4 Ping Test

The ping test is to determine whether an IP address or host is present on the Internet. Type the host name or IP address in the text box and click **"Ping"** to start testing.



# Glossary

**Access Point:** An internetworking device that seamlessly connects wired and wireless networks.

**Ad-Hoc:** An independent wireless LAN network formed by a group of computers, each with a network adapter.

**ASCII:** American Standard Code for Information Interchange, ASCII, is one of the two formats that can use for entering the values for WEP key. It represents English letters as numbers from 0 to 127.

**Authentication Type:** Indication of an authentication algorithm which can be supported by the Access Point:

1. Open System: Open System authentication is the simplest of the available authentication algorithms. Essentially it is a null authentication algorithm. Any station that requests authentication with this algorithm may become authenticated if 802.11 Authentication Type at the recipient station is set to Open System authentication.
2. Shared Key: Shared Key authentication supports authentication of stations as either a member of those who knows a shared secret key or a member of those who does not.

**Backbone:** The core infrastructure of a network, which transports information from one central location to another where the information is unloaded into a local system.

**Bandwidth:** The transmission capacity of a device, which is calculated by how much data the device can transmit in a fixed amount of time expressed in bits per second (bps).

**Beacon:** A beacon is a packet broadcast by the Access Point to keep the network synchronized. Included in a beacon are information such as wireless LAN service area, the AP address, the Broadcast destination addresses, time stamp, Delivery Traffic Indicator Maps, and the Traffic Indicator Message (TIM).

**Bit:** A binary digit, which is either -0 or -1 for value, is the smallest unit for data.

**Bridge:** An internetworking function that incorporates the lowest 2 layers of the OSI network protocol model.

**Browser:** An application program that enables one to read the content and interact in the World Wide Web or Intranet.

**BSS:** BSS stands for “Basic Service Set”. It is an Access Point and all the LAN PCs that associated with it.

**Channel:** The bandwidth which wireless Radio operates is divided into several segments, which we call them “Channels”. AP and the client stations that it associated work in one of the channels.

**CSMA/CA:** In local area networking, this is the CSMA technique that combines slotted time -division multiplexing with carrier sense multiple access/collision detection (CSMA/CD) to avoid having collisions occur a second time. This works best if the time allocated is short compared to packet length and if the number of situations is small.

**CSMA/CD:** Carrier Sense Multiple Access/Collision Detection, which is a LAN access method used in Ethernet. When a device wants to gain access to the network, it checks to see if the network is quiet (senses the carrier). If it is not, it waits a random amount of time before retrying. If the network is quiet and two devices access the line at exactly the same time, their signals collide. When the collision is detected, they both back off and wait a random amount of time before retrying.

**DHCP:** Dynamic Host Configuration Protocol, which is a protocol that lets network administrators manage and allocate Internet Protocol (IP) addresses in a network. Every computer has to have an IP address in order to communicate with each other in a TCP/IP based infrastructure network. Without DHCP, each computer must be entered in manually the IP address. DHCP enables the network administrators to assign the IP from a central location and each computer receives an IP address upon plugged with the Ethernet cable everywhere on the network.

**DSSS:** Direct Sequence Spread Spectrum. DSSS generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

**Dynamic IP Address:** An IP address that is assigned automatically to a client station in a TCP/IP network by a DHCP server.

**Encryption:** A security method that uses a specific algorithm to alter the data transmitted, thus prevent others from knowing the information transmitted.

**ESS:** ESS stands for “Extended Service Set”. More than one BSS is configured to become Extended Service Set. LAN mobile users can roam between different BSSs in an ESS.

**ESSID:** The unique identifier that identifies the ESS. In infrastructure association, the stations use the same ESSID as AP's to get connected.

**Ethernet:** A popular local area data communications network, originally developed by Xerox Corp., that accepts transmission from computers and terminals. Ethernet operates on a 10/100 Mbps base transmission rate, using a shielded coaxial cable or over shielded twisted pair telephone wire.

**Fragmentation:** When transmitting a packet over a network medium, sometimes the packet is broken into several segments, if the size of packet exceeds that allowed by the network medium.

**Fragmentation Threshold:** The Fragmentation Threshold defines the number of bytes used for the fragmentation boundary for directed messages. The purpose of "Fragmentation Threshold" is to increase the transfer reliability thru cutting a MAC Service Data Unit (MSDU) into several MAC Protocol Data Units (MPDU) in smaller size. The RF transmission can not allow to transmit too big frame size due to the heavy interference caused by the big size of transmission frame. But if the frame size is too small, it will create the overhead during the transmission.

**Gateway:** a device that interconnects networks with different, incompatible communication protocols.

**HEX:** Hexadecimal, HEX, consists of numbers from 0 – 9 and letters from A – F.

**IEEE:** The **I**nstitute of **E**lectrical and **E**lectronics **E**ngineers, which is the largest technical professional society that promotes the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession. The IEEE fosters the development of standards that often become national and international standards.

**Infrastructure:** An infrastructure network is a wireless network or other small network in which the wireless network devices are made a part of the network through the Access Point which connects them to the rest of the network.

**ISM Band:** The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4GHz, in particular, is being made available worldwide.

**MAC Address:** Media Access Control Address is a unique hex number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level.

**Multicasting:** Sending data to a group of nodes instead of a single destination.

**Node:** A network junction or connection point, typically a computer or workstation.

**Packet:** A unit of data routed between an origin and a destination in a network.

**PLCP:** Physical layer convergence protocol

**PPDU:** PLCP protocol data unit

**Preamble Type:** During transmission, the PSDU shall be appended to a PLCP preamble and header to create the PPDU. Two different preambles and headers are defined as the mandatory supported long preamble and header which interoperates with the current 1 and 2 Mbit/s DSSS specification as described in IEEE Std 802.11-1999, and an optional short preamble and header. At the receiver, the PLCP preamble and header are processed to aid in demodulation and delivery of the PSDU. The optional short preamble and header is intended for application where maximum throughput is desired and interoperability with legacy and non-short-preamble capable equipment is not consideration. That is, it is expected to be used only in networks of like equipment that can all handle the optional mode. (IEEE 802.11b standard)

**PSDU:** PLCP service data unit

**Roaming:** A LAN mobile user moves around an ESS and enjoys a continuous connection to an Infrastructure network.

**RTS: R**equest **T**o **S**end. An RS-232 signal sent from the transmitting station to the receiving station requesting permission to transmit.

**RTS Threshold:** Transmitters contending for the medium may not be aware of each other. RTS/CTS mechanism can solve this “Hidden Node Problem”. If the packet size is smaller than the preset RTS Threshold size, the RTS/CTS mechanism will NOT be enabled.

**SSID:** Service Set Identifier, which is a unique name shared among all clients and nodes in a wireless network. The SSID must be identical for each clients and nodes in the wireless network.

**Subnet Mask:** The method used for splitting IP networks into a series of sub-groups, or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

**TCP/IP:** Transmission Control Protocol/ Internet Protocol. The basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network, i.e. intranet or internet. When set up with direct access to the Internet, computer is provided with a copy of the TCP/IP program just as every other computer that user may send messages to or get information from also has a copy of TCP/IP.

**Throughput:** The amount of data transferred successfully from one point to another in a given period of time.

**WEP:** Wired Equivalent Privacy (WEP) is an encryption scheme used to protect wireless data communication. To enable the icon will prevent other stations without the same WEP key from linking with the AP.

# Certification Notes

**Federal Communication Commission Interference Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

**IMPORTANT NOTE: FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. To maintain compliance with FCC RF exposure compliance requirements, please avoid direct contact to the transmitting antenna during transmitting.

This transmitter must not be co-located or operating in conjunction with any

other antenna or transmitter.

We declare that the product is limited in CH1~CH11 by specified firmware controlled in the USA.